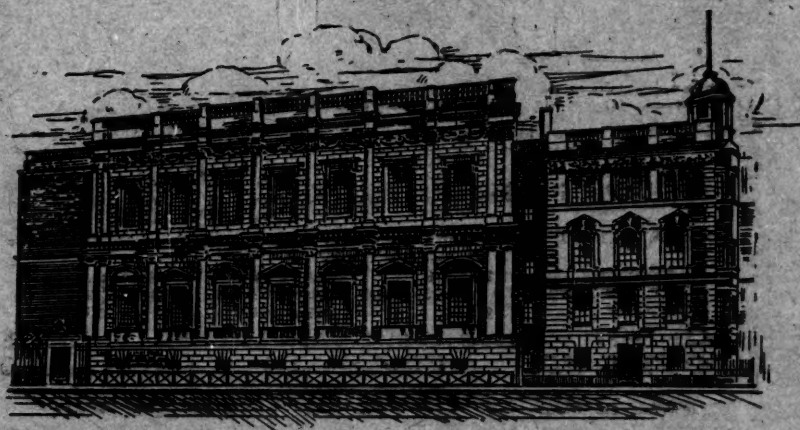


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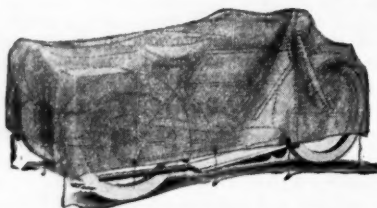
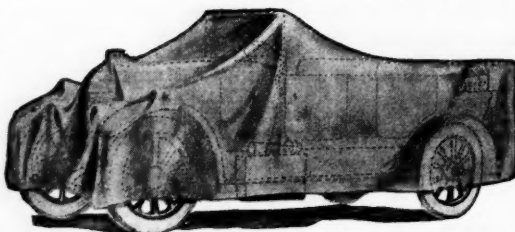
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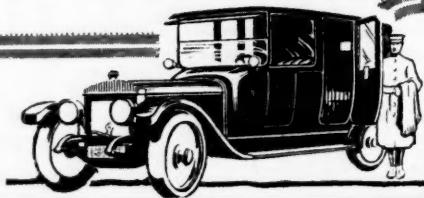
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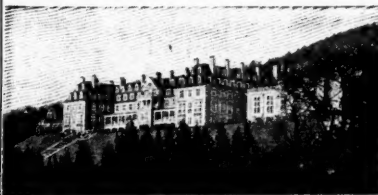


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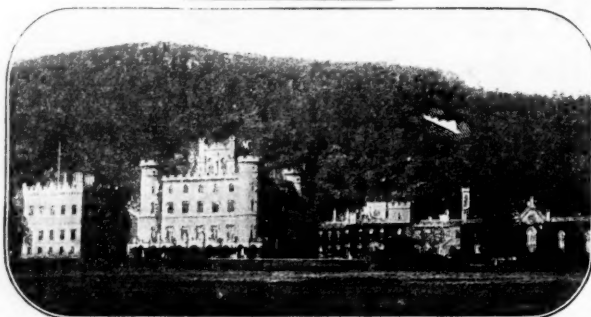
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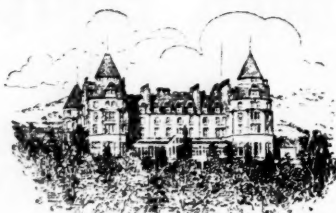
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| 1876. Lieutenant J. F. G. Ross of
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| 1877. No Medal awarded. | 1904. Lieut.-Colonel C. E. D. Telfer-
Smollett, 3rd Bn. South Staf-
fordshire Regiment. |
| 1878. Major T. Fraser, R.E.
Captain E. Clayton, R.A. | 1905. Major W. C. Bridge, South Staf-
fordshire Regiment, p.s.c. |
| 1879. Captain The Hon. E. R. Fre-
mantle, C.B., C.M.G., A.D.C.,
R.N. | 1906. Lieutenant B. E. Domville, R.N. |
| 1880. Captain J. K. Trotter, R.A. | 1907. Lieut.-Colonel A. F. Mockler-
Ferryman, Reserve of Officers. |
| 1881. Captain L. Brine, R.N. | 1908. Major A. B. N. Churchill, R.G.A. |
| 1882. No Medal awarded. | 1909. No Medal awarded. |
| 1883. Captain C. Johnstone, R.N. | 1910. Captain P. W. Game, R.H.A. |
| 1884. Captain G. T. Browne, North-
amptonshire Regiment. | 1911. Captain H. T. Russell, late
R.G.A. |
| 1885. Lieutenant F. C. D. Sturdee,
R.N. | 1912. Commander K. G. B. Dewar,
R.N. |
| 1886. Captain C. E. Callwell, R.A. | 1913. Major A. Lawson, 2nd Drags. |
| 1887. No Medal awarded. | 1914-15-16-17. No Medals awarded. |
| 1888. Captain J. F. Daniell, R.M.L.I. | 1918. Lieutenant W. S. R. King-Hall,
R.N. |
| 1889. Captain H. F. Cleveland, R.N. | 1919. Colonel J. F. C. Fuller, D.S.O.,
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| 1890. Captain G. E. Benson, R.A. | 1920. No Medal awarded. |
| 1891. Captain R. W. Craigie, R.N. | 1921. Flight-Lieutenant C. J. Mackay,
M.C., D.F.C., R.A.F. |
| 1892. Lieut.-Colonel J. Farquharson,
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R.N. | 1923. Captain A. H. Norman, C.M.G.,
R.N. |
| 1894. Major F. B. Elmslie, R.A. | 1924. Major L. I. Cowper, O.B.E.,
King's Own Royal Regiment. |
| 1895. Commander J. Honner, R.N. | 1925. Lieut.-Colonel J. C. Dundas, D.S.O.,
Royal Tank Corps. |
| 1896. Captain G. F. Ellison, Queen's
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| 1897. Commander G. A. Ballard, R.N. | |
| 1898. Captain W. B. Brown, R.E. | |
| 1899. Commander G. A. Ballard, R.N. | |
| 1900. No Medal awarded. | |

RECIPIENTS OF THE CHESNEY GOLD MEDAL

(With rank of Officers at the time of the Award).

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| 1900. Captain A. T. Mahan, United
States Navy. | 1914. Sir Julian S. Corbett, LL.M.,
F.S.A. |
| 1907. Major-General Sir J. F. Maurice,
K.C.B., p.s.c. | 1919. Major-General E. D. Swinton,
C.B., D.S.O. |
| 1909. Hon. J. W. Fortescue, M.V.O. | 1921. Major-General Sir C. E. Callwell,
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| 1910. Sir J. K. Laughton, Knt., M.A. | 1924. Professor G. A. R. Callender,
M.A., F.S.A. |
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SECRETARY'S NOTES

MAY, 1926.

I.—Council.

At the Anniversary Meeting on 2nd March, 1926, the following Members were elected Members of the Council :—

Field-Marshal The Viscount Allenby, G.C.B., G.C.M.G.

General Sir J. A. L. Haldane, G.C.M.G., K.C.B., D.S.O.

Major-General H. F. Thuillier, C.B., C.M.G.

Colonel C. H. Colvin, C.B., D.S.O.

Colonel A. S. Bates, D.S.O., T.D.

Captain Lord Tredegar, C.B.E., F.S.A., R.N.V.R., A.D.C. to H.M. The King.

Major-General H.H. The Marharajah of Bikaneder, G.C.S.I., G.C.I.E., G.C.V.O., G.B.E., K.C.B., has been appointed an Honorary Member of the Council.

II.—Chairmen of the Council.

General Lord Horne, G.C.B., K.C.M.G., has been re-elected Chairman of the Council for 1926-1927.

Vice-Admiral Sir H. H. Bruce, K.C.B., M.V.O., has been re-elected Vice-Chairman for 1926-1927.

III.—Council Committees.

The Committees of the Council are now composed :—

FINANCE.—Colonel C. W. Trotter, C.B., T.D.; Colonel A. S. Bates, D.S.O., T.D.; Colonel C. H. Colvin, C.B., D.S.O.; Lieut.-General H. D. Farquharson, C.M.G.; Brig.-General The Earl of Lucan, K.B.E., C.B., T.D., A.D.C.; Admiral Sir R. G. O. Tupper, G.B.E., K.C.B., C.V.O.; and Captain Sir D. Wilson-Barker, Knt., R.D., R.N.R.

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IV.—Entrance Fee and Subscriptions.

The following alterations in the Bye-Laws were carried unanimously at the General Meeting on 2nd March :—

THE ENTRANCE FEE FOR MEMBERS JOINING AFTER 30TH JUNE, 1926, will be £2 2s., and the annual subscription will be £1 5s., i.e., the total first payment to join the Institution after that date will be £3 7s. This will include the existing 10s. subscription for use of the Lending Library.

THE ANNUAL SUBSCRIPTION FOR ALL MEMBERS FROM 1ST JANUARY, 1927, will be increased from £1 1s. to £1 5s., and this will then include the existing 10s. subscription for use of the Lending Library. In other words, all members pay 4s. extra subscription per annum, but for this they are entitled to the full use of the Library without additional charge.

In the Autumn every Annual Member will receive, from this office, a formal notice of these increases and a new banker's order for the signature of those who pay their subscription through a bank.

LIFE MEMBERS.

- (a) Present Life Members of the Institution may also become Life Members of the Lending Library by one payment of £5 5s.; alternatively they may continue, as now, to pay 10s. per annum if they desire to use the Lending Library.
- (b) Life Members joining after 30th June, 1926, will pay £20; this will include the use of the Lending Library.

V.—New Members.

The following officers joined the Institution during the months of February, March and April, viz. :—

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 Flight-Lieutenant F. R. Wynne, M.B.E., R.A.F.
 Lieutenant G. C. Brown, late Grenadier Guards (S.R.).
 Captain W. R. Brazier, M.C., R.A.
 Lieutenant R. P. Haig, Queen's Own Cameron Highlanders.
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 Major W. A. K. Fraser, C.B.E., D.S.O., M.C., I.A.
 Captain J. O. M. Ashley, R.A.
 Lieutenant C. E. Montagu, R.E.
 Lieutenant H. S. Scott, King's Own Royal Regiment.
 Captain S. C. Dumbreck, 1st Royal Dragoons.
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 Lieutenant F. W. Young, Lincolnshire Regiment.
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 Captain E. E. Dorman-Smith, M.C., Northumberland Fusiliers.
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 Lieutenant J. F. Walker, King's Own Yorkshire Light Infantry.
 Lieutenant C. P. B. Wilson, R.A.
 Captain R. L. M. Collins, Rifle Brigade.
 Lieutenant C. L. Ferard, M.C., R.A.
 Captain J. B. Dalison, I.A.
 Lieutenant H. F. K. Wedderburn, Black Watch.
 Lieutenant C. E. Fordyce, Seaforth Highlanders.
 Captain H. T. Newman, Royal Marines.
 Lieut.-Colonel H. G. Martin, D.S.O., O.B.E., R.A.
 Lieut.-Colonel L. E. Lushington, late Dorsetshire Regiment.
 Captain M. K. Watson, Wiltshire Regiment.
 Lieutenant R. C. Murchison, Northamptonshire Regiment.
 Captain H. L. Barstow, I.A.
 Lieutenant M. B. Dowse, Royal Welch Fusiliers.
 Lieutenant E. T. Weigall, R.A.

In the Secretary's Notes of the February JOURNAL, Lieutenant W. M. Phipps-Hornby, R.A., should have been described as Lieut.-Commander W. M. Phipps-Hornby, R.N.

VI.—Letters.

Members are reminded that the Council can accept no responsibility in the matter of letters and telegrams addressed to them at the Institution, there being no arrangement for the reception and forwarding of letters, etc.

VII.—Cleaning of the Institution Building.

The Institution and Library will be closed for cleaning from Monday, 9th August, to Saturday, 21st August, inclusive, but the Museum will remain open.

VIII.—Important Standing Order.

A Member in arrear with his annual subscription after 31st March of each year shall not be entitled to use the Institution buildings, receive the JOURNAL, or participate in any of the privileges accorded to Members.

IX.—New Members.

A form is inserted in every JOURNAL for the benefit of those officers who may wish to join the Institution. The filling up of the form and its transmission to the Secretary is all that is necessary in the case of officers whose names appear or have appeared in the Official Lists. The Council hope that Members will circulate these forms.

X.—Change of Rank and Address.

The attention of Members is called to the necessity for communicating any changes of rank or address to the Secretary. It is essential that such notification should be made in writing. The 1st day of the month is the last day on which such change can be notified in order to take effect for the delivery of the JOURNAL of the current quarter. If such changes are not notified, Members themselves will be responsible if their JOURNALS fail to reach them through being wrongly addressed, and officers are requested to write their names, with initials, distinctly on such communications. Several signatures have recently been received which it has been impossible to decipher, and as there are many instances of Members bearing the same name and initials, it is requested, therefore, that they will add their rank. The Council beg to draw the attention of Members, who do not have the JOURNAL sent to them, and have not registered an address with the Secretary, to the fact, that they (the Council) cannot be held responsible if such Members do not receive any notices that may from time to time be sent out.

XI.—Regimental Colours.

The Institution is prepared to arrange for the repairs to Regimental Colours and Cavalry Standards, in service or otherwise, and placing the new Battle Honours on the King's Colour. Enquiries having been made as to the cost of such repairs, the Secretary begs to state that the average cost is from £8 to £10 a Colour, of which the Institution only receives £1, to cover the cost of materials, carriage, etc.; placing on the Battle Honours, 2s. 6d. each.

The Colours of the following Regiments have been restored, etc., by the Institution since the publication of the last list:—2nd Bn., King's Own Yorkshire Light Infantry; Royal Inniskilling Fusiliers; 19th Bn., London Regiment (T.A.); West African Regiment; 2nd Bn., The Loyal Regiment; 2nd Bn., Gloucestershire Regiment; 1st Bn., 9th Jat Infantry; 1st Bn., South Wales Borderers; 2nd, 3rd, 4th and 5th Regiments, Essex Local Militia; 36th Native Infantry, I.A.; 2nd Bn., 71st Regiment; 5th Fusiliers; 11th Regiment of Portuguese Infantry (two pairs); Royal Marines, Chatham; two old Colours of the Coldstream Guards; 3rd Bn., York and Lancaster Regiment; Silk Banner of Peterhouse College, Cambridge; and an Afghan flag.

XII.—The Museum.

The amount taken for admission to the Museum during the past quarter was:—

£58 18s. 6d. in February.

£45 1s. 6d. in March.

£122 5s. 0d. in April.

ADDITIONS.

(7909) Eight Postal Orders (£1 to 1s.) of the South African Republic.—
Given by Colonel R. E. Daubeney, C.B.E., R.A.P.C.

vi.

SECRETARY'S NOTES

(7910) The following Rifles, which were issued to the Ulster Volunteers, 1914 :—

- (1) Mauser Rifle with bayonet.
- (2) Vittili Vitati Rifle with bayonet.
- (3) Martini-Lee-Netford Carbine with bayonet.

Given by the Minister of Home Affairs (The Right Hon. Sir Richard Dawson Bates, O.B.E.).

XIII.—Museum Staff.

The Secretary regrets to report the death of Museum Attendant J. Preston, formerly a petty-officer in the Royal Navy, who had been on the Museum Staff for seventeen years, for the last five of which he was in charge of the Naval Exhibits, and was responsible for the re-rigging of several of the ship models. He will be a difficult man to replace.

JOURNAL NOTES.

Delay in Publication.—The Editor regrets the delay in the publication of this number of the JOURNAL, which has been due to the strike.

Old Journals.—There is a continual demand for back JOURNAL and this cannot always be met. Members who have finished JOURNALS or who wish to make more room on their shelves are specially asked to return old copies to the Institution. Cost of carriage will be defrayed for. JOURNALS dated February and August, 1922, February, 1923, and 1st quarter of 1920 and 1925 are specially required.

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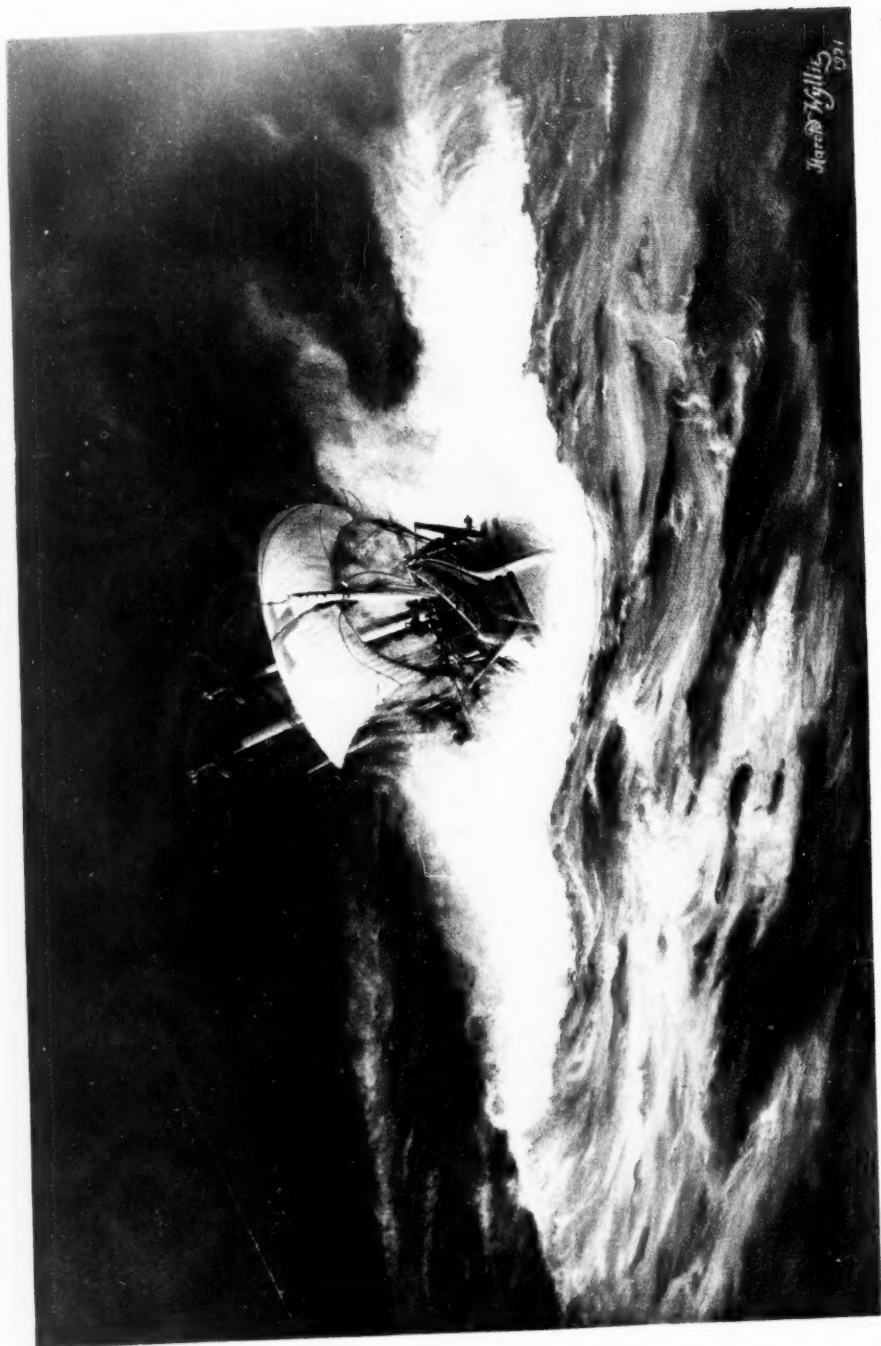


Fig. 2. "Golden Hinde" off Cape Horn, 1578.

Fig. 3. "Golden Hinde" off Cape Horn, 1578.

EMPIRE COMMUNICATIONS
THE OLD WAY
THE "GOLDEN HINDE" OFF CAPE HORN 1578
Picture presented by World Communications, Ltd. at Weymouth, B. at 1.1.49

World Communications
1934

THE JOURNAL
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No. 482.

[Authors alone are responsible for the contents of their respective Papers.
All communications (except those for perusal by the Editor only)
should be addressed to the Secretary, Royal United Service Institution].

**GOLD MEDAL (NAVAL) PRIZE ESSAY
FOR 1925**

SUBJECT.

**"The communications across the oceans of the world being essential
to the Empire, how best can they be safeguarded?"**

By LIEUT.-COLONEL J. C. DUNDAS, D.S.O., Royal Tank Corps.

Motto : " Ships, more ships ! "

I. INTRODUCTORY.

Since ocean communications are essential to the life of the Empire, both in peace and war, the problem of safeguarding them opens up a very wide field of discussion, involving not only warlike measures, but also diplomatic, commercial and economic questions of a complex nature, and it is necessary, therefore, in the first place to consider the part which they play in peace and war.

II.—FUNCTIONS OF OCEAN COMMUNICATIONS.

In so far as peace is concerned, a very brief statement will explain the essential functions of ocean communications.

The Empire, owing to its geographical and economic situation, is in no part self-contained, each part being dependent (as a reference to Whitaker's Almanac or Board of Trade Statistics shows) for its economic, no less than its physical life, on its export and import trade. Moreover, the complex financial and economic organisation of the modern world is so intimately bound up with the carriage of seaborne trade that, as our experience since 1914 clearly shows, any disorganisation of the latter must inevitably produce a state akin to chaos in the former.

Consequently, as a primary axiom, it may be stated that the life of the Empire in peace depends on complete freedom of seaborne trade. From this again it follows as an inevitable corollary that shipping which transports this trade must have :—

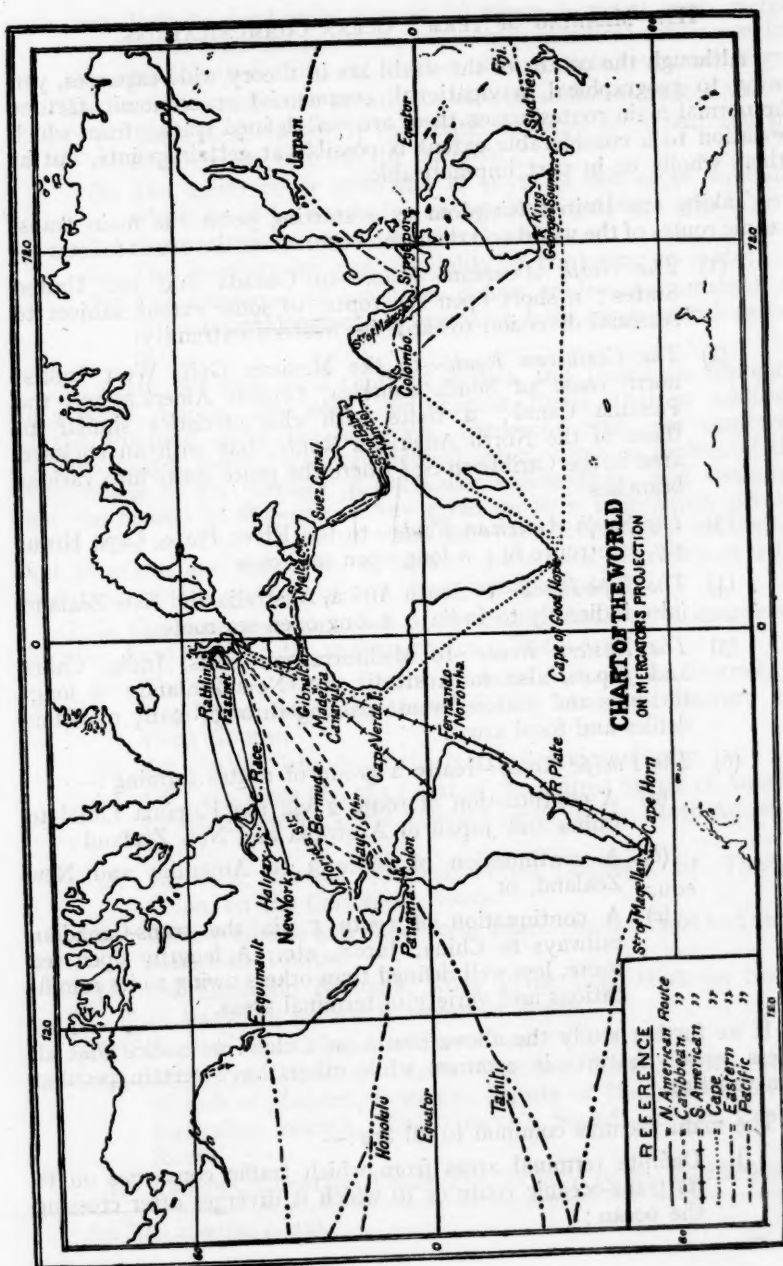
- (a) Security of passage from terminal to terminal;
- (b) Adequate bunkering and harbourage facilities on the trade routes;
- (c) Efficient navigational aids, charts, lights, etc., and
- (d) Equal economic and commercial facilities in the ports or controlled maritime defiles of the world.

Passing next to the considerations of war, we observe that the reasons why secure sea communications are essential to the Empire are :—

- (a) To permit unhampered maintenance of seaborne trade between ports overseas and the United Kingdom or allied countries and vice versa;
- (b) To ensure the continuance to the maximum degree practicable of that seaborne trade between British, allied and neutral ports abroad on which economic equilibrium largely depends;
- (c) To permit free movement by sea of military or air expeditionary forces when and where required;
- (d) To provide for free movement of naval forces when and where required;
- (e) To permit safe transport of all personnel and material necessary for the maintenance of naval, military or air forces serving overseas.

Of these (a), (b) and (e) are operations of a continuous nature, while (c) and (d) take place at uncertain moments and are often difficult to foresee.

Having thus outlined the functions of ocean communications in peace and war, it is necessary before proceeding to discuss the methods to be employed to safeguard them to define exactly what the term "ocean communications" implies, and to discuss the salient features of the various lines of communication.



MAIN SEA ROUTES AND FOCAL AREAS.

III.—MEANING OF TERM "OCEAN COMMUNICATIONS."

Although the oceans of the world are in theory wide expanses, yet, owing to geographical, navigational, commercial or economic factors, the normal main routes across them are well-defined tracks, from which deviation to a considerable extent is possible at certain points, but at others wholly or in part impracticable.

Taking the United Kingdom as a starting point the main trans-oceanic routes of the world and their chief characteristics are as follows :—

- (1) *The North American Route*—to Canada and the United States ; a short open sea route, to some extent subject to seasonal diversion towards its western extremity.
- (2) *The Caribbean Route*—to the Mexican Gulf, West Indies, north coast of South America, Central America and the Panama Canal ; a route with characteristics similar to those of the North American Route, but with an enclosed area in the Caribbean Sea where the route splits into various branches.
- (3) *The South American Route*—to the River Plate, Cape Horn, etc. (see route 6) ; a long open sea route.
- (4) *The Cape Route*—to South Africa, Australia and New Zealand (also indirectly to India) ; a long open sea route.
- (5) *The Eastern Route*—to Mediterranean ports, India, China and Japan, also to Australia and New Zealand ; a long, tortuous and enclosed route passing through many maritime defiles and focal areas.
- (6) *The Pacific Route*—really a group of routes forming :—
 - (a) A continuation of route 2 via the Panama Canal to China and Japan or Australia and New Zealand ;
 - (b) A continuation of route 3 to Australia and New Zealand, or
 - (c) A continuation of route 1 via the trans-Canadian railways to China, Japan, etc. A lengthy open sea route, less well defined than others owing to its ramifications and variety of terminal areas.

If we further study the above routes on a chart we notice that all possess certain features in common while others have certain peculiar characteristics.

The main features common to all are :—

- (i) Definite terminal areas from which traffic converges on to its trans-oceanic route or to which it diverges after crossing the ocean ;

- (ii) Definite focal areas formed (a) where terminal areas merge in the trans-oceanic route ; (b) where maritime defiles restrict possible deviation ; or (c) where two or more routes converge.

The features which vary greatly as between different routes are :—

- (i) The extent to which the route traverses open sea, and its length from terminal to terminal ;
- (ii) The existence or otherwise of ports of call or of landfalls which must be made for navigational purposes which give rise to deviation from the direct route ;
- (iii) The necessity for and possibility of bunkering *en route* ;
- (iv) The existence of maritime defiles subject to national or international control, or operative from geographical causes only.

If, again, we look at a chart of British and Dominion Shipping on a given day in the year,¹ we observe, firstly, that in addition to the shipping using the highways, numerous craft are employed on cross routes, usually less well defined, which serve as feeders of the main routes or for carriage of particular commodities, and secondly, that the density of shipping at any given moment is infinitely greater in the focal areas on the routes than elsewhere, from which we deduce that in peace, and still more so in war, such focal areas are of vital importance to the security of our ocean communications.

It is therefore necessary, before proceeding further, to enumerate the main focal areas on the various routes. These are :—

- (a) The mouth of the English Channel and off the Fastnet, on North American, Caribbean, South American, Eastern and Cape Routes.
- (b) Off Rathlin Islands on the North American Route.
- (c) Off Cape Race and the Coast of the United States of America between New York and Newport News, on the North American Route.
- (d) Bermuda, Florida Channel, Hayti Channels, St. Thomas, Colon, on the Caribbean Route.
- (e) Canary Islands and Cape Verde Islands on the Cape and South American Routes.
- (f) Off Fernando Noronha, River Plate, Cape Horn (or Straits of Magellan) on South American Route.
- (g) Cape of Good Hope on Cape Route.
- (h) Straits of Gibraltar, Malta Channel, Suez Canal, Straits of Bab el Mandeb, Colombo, Straits of Malacca (or on the Australian branch, King George's Sound) on the Eastern Route.
- (i) Panama, Honolulu, Tahiti, Fiji, Sydney, on the Pacific Route.

¹ See Map 2, facing p. 250.

IV.—HISTORICAL LESSONS.

With these premises it is now possible to consider what actual experience we have to guide us in our solution of the problem set.

Although ocean communications were vital to us in wars prior to 1914, conditions, both as to offence and defence, differed so greatly from those of to-day that little is to be gained by studying them in detail. It is, therefore, to the Great War that we must turn for guidance, and even in the case of that war we must not be too hasty in accepting as conclusive such deductions as we may draw, since not only must we make allowance for subsequent development in material, but also for the fact that the strategic conditions then prevailing were somewhat exceptional, and not likely to be repeated in the next war.

Although it is impossible within the compass of this paper to deal historically with the events of the Great War in any detail, it is necessary, in order that we may deduce principles for future guidance, to outline the salient features of events in so far as they affect the problem with which we are dealing.

For our present purpose the Great War may arbitrarily be divided into four phases.

1st phase.

From the outbreak of war to the opening of the submarine campaign against shipping in January, 1915, and including—

- (a) The transport of the Expeditionary Force to France;
- (b) The enemy surface cruiser campaign and
- (c) The actions of Coronel and the Falkland Islands.

2nd phase.

From January, 1915, to the opening of unrestricted submarine warfare in February, 1917, and including the extension of the theatre of war to the Dardanelles, Salonika, Egypt, Mesopotamia, etc.

3rd phase.

From February, 1917, to the institution of the convoy system in the summer of that year.

4th phase.

From the summer of 1917 to the end of the war, including the transport of the American army to Europe.

FIRST PHASE.

The outbreak of war produced a strategic situation unlike any that had faced us in previous wars. Over and above the great developments which had taken place in ships and armament, we were confronted with

a primary opponent whose main naval power lay in the North Sea in place of one whose naval strength lay westward of the Channel, while Austria formed a naval factor in the Mediterranean which, together with the uncertainty as to Italy's action, necessitated retention of strong forces in that sea. On the other hand, we were acting in concert with Russia and our hereditary enemy, France, a fact which served to ease the situation in the Mediterranean to some extent. The transport of the Expeditionary Force of six divisions to France had also to be taken into account.

This situation demanded the concentration of our main fleet off the east coast of Scotland, thereby ensuring a superiority over the German High Sea Fleet in all natures of ship except destroyers, of which we were very short. This concentration also assisted indirectly but very materially, in the protection of shipping in the Channel and the Atlantic, and in the interception of hostile shipping bound for Germany, since the occupation by us of the Channel and the northern approaches between Shetland and the Norwegian Coast enclosed the German Coast as it were, in the arms of the United Kingdom, and this occupation was rendered possible only by the superiority of the Grand Fleet over the High Seas Fleet.

In the Mediterranean the combined Franco-British Fleet was superior to the Austrian Fleet in the Adriatic even if joined by the "Goeben" and "Breslau," known to be in the Mediterranean.

In the Far East, the East Indies, China and Australian Squadrons were capable of dealing with Von Spee's squadron, if it remained in those waters.

Elsewhere abroad the enemy had only isolated cruisers such as the "Leipzig," last heard of on the West Coast of North America, "Nürnberg" at Honolulu, "Dresden" and "Kronprinz Wilhelm" off the East Coast of South America.

Our squadron in the West Indies was at the moment stronger than usual owing to Mexican troubles, and a light squadron was also on the South African Station.

Commerce protection and interception were provided for by the location at focal points on the trade routes, intermediate between the stations of foreign service squadrons and home waters, of cruiser squadrons, supported in certain areas by heavier ships, while in narrow waters, such as the Channel, the Western Approaches, etc., constant destroyer patrols were maintained.

Owing to the fact that many of the cruisers intended for commerce protection were in a low category of readiness for mobilization, they could only move to their stations gradually, although, owing to the fact that the outbreak of war coincided with the close of a test mobilization, our state of readiness was greater than would normally have been the case, while liners, taken up for arming as cruisers, took a considerable

time to prepare for service. Even when all pre-arranged movements had been completed, there were too few ships to enable them adequately to carry out their role.

Financial panic in merchant shipping circles at the outbreak of war had also been anticipated and to meet such a crisis a scheme of State insurance of hulls and cargoes had been prepared. This, incidentally, included a useful condition as to ships insured obeying Admiralty instructions as to routes, etc.

The Naval Intelligence Service was also in smooth working order both at home and abroad, and complete arrangements had been made for wireless and cable communication.

Owing to the geographical constitution of the Empire, our shipping abroad was generally speaking much better served as regards bases, fuelling stations and means of communication than that of the enemy. An exception to this was the South American Station where the Falkland Islands was our only coaling station. The German W/T facilities in the Western Pacific, and on the East and West Coasts of Africa, gave them some slight advantage in those areas.

The transport of the Expeditionary Force was in part carried out under much more difficult circumstances than had been anticipated owing to the enforced transfer of the base from the Channel ports to San Nazaire. Its success was due primarily to the fact that the Grand Fleet successfully neutralised the High Seas Fleet, while cruisers and destroyers screened the actual passage of the transports.

The work of our commerce protection squadrons generally was rendered difficult (a) by the inadequacy of the number of cruisers available effectively to cover the large areas allotted to them; (b) by the necessity of watching the large number of hostile ships which on the outbreak of war took refuge in neutral ports (especially those on the Portuguese and U.S.A. Coasts); and (c) by the additional task thrown on them of safeguarding convoys conveying returning overseas garrisons or minor military expeditions such as those in the Pacific or on the West Coast of Africa.

In the Far East, the presence of Admiral Von Spee's Squadron, until it was definitely known to have moved to the Eastern Pacific, hampered the operations of Admiral Jerram's Squadron by enforcing a degree of concentration otherwise unnecessary. On the other hand the enemy's cruisers abroad were severely hampered by the lack of secure bases for refuelling and refitting and the necessity for performing these necessary tasks at secluded spots with no facilities, or on the high seas.

Generally speaking, warnings were successfully conveyed to our merchant ships at sea on the outbreak of war, though the lack of W/T, except in larger liners, made it more difficult. Directions as to routes,

etc., were also conveyed through the Naval Intelligence Service acting in conjunction with Lloyds and British Consuls abroad, and the volume of shipping after the first few days was well maintained.

With the details of the enemy's cruiser warfare against shipping it is impossible to deal, and for these the reader must be referred to published narratives ;¹ but large as the results obtained by hostile cruisers appeared at the time to be, they were purely local and sporadic and insufficient to produce more than a temporary dislocation of trade, as is shown by the fact that the total losses of British steam shipping from the outbreak of war to 31st January, 1915, including losses due to mines, amounted only to 1.37 per cent. of the total steam tonnage flying the British flag in August, 1914.²

The actions of Coronel and the Falkland Islands, on the other hand, showed clearly how serious is the danger of committing a squadron inferior in speed and armament to action with a superior force, and how great the effect on trade resulting from such an action may be if the enemy displays any activity.

The lessons to be drawn from this phase are :—

(1) As regards our main naval forces—

- (a) That superiority of our main fleet over the enemy's, even though the latter be only neutralised, and not defeated, is a primary condition of effective protection of our ocean communications ;
- (b) That a correct strategic disposition of the main fleet from the outset is necessary to enable the above role to be carried out.

(2) As regards surface cruisers—

- (a) That although isolated hostile cruisers may produce considerable loss, yet such ships cannot, unless operating in close proximity to a secure base or supported by heavier forces, have more than a sporadic and local influence on a campaign ;
- (b) That the action of isolated raiders, owing to the short time which they can spend on their station in the intervals between refuelling, can only be really effective where traffic is dense, i.e., in focal areas, and that their effectiveness will be greater or less according to whether these focal areas are near to or far from suitable places where refuelling and refitting can be carried out unmolested ;

¹ Official History of the War—Naval Operations, Vol. I ; History of Seaborne Trade, Vol. I, etc.

² Official History of Seaborne Trade, Vol. I, p. 385.

- (c) That if one side is able to maintain commerce protection squadrons in focal areas and the other side has only isolated raiding cruisers, the latter must in time succumb;
 - (d) That the establishment in peace time of suitably placed naval bases or fuelling stations on the ocean communications of the world, combined with the naval, military and air power necessary to keep them secure in war time, will confer an inestimable advantage on the Power which possesses them;
 - (e) That the work of commerce protection, combined as it must inevitably be with the protection of transports, etc., passing through the area to which a squadron is allotted, and with the interception of hostile and neutral shipping, absorbs a very large number of fast cruisers, armed liners, and lighter craft.
- (3) As regards Merchant Shipping—
- (a) That fear of financial loss operates to keep ships off the trade routes to a much greater extent than fear of sinking;
 - (b) That given suitable directions as to routes and compliance with orders as to lights, etc., the percentage of merchant shipping lost through the action of hostile surface cruisers will be small;
 - (c) That W/T is of great use for receiving messages as to the presence of hostile warships, but that injudicious transmission is liable to betray the ship's position to the enemy.
- (4) From the operations of Admiral Von Spee we learn—
- (a) That the presence of a hostile squadron in any area will necessitate a squadron opposed to it retaining a sufficient degree of concentration to secure superiority and thereby militate against adequate protection of the trade routes in its area against hostile raiders;
 - (b) That under modern conditions victory in action will normally lie with the squadron possessed of the greatest speed and weight of metal, and that to risk a squadron in distant waters which is inferior in these respects may well result in the total disorganisation of trade in those seas.

SECOND PHASE.

Although during the latter weeks of the first phase a few isolated instances had occurred of ships being sunk in home waters by German

submarines and further losses had occurred from the promiscuous mining of areas in contravention of the Hague Conference, it was not until 30th January, 1915, that the new system of commerce destruction was really inaugurated. As compared with surface cruisers, the submarines of that date possessed certain material advantages, namely the power to act in close juxtaposition to hostile bases and at the point of maximum density of traffic, in this case around the British Isles.

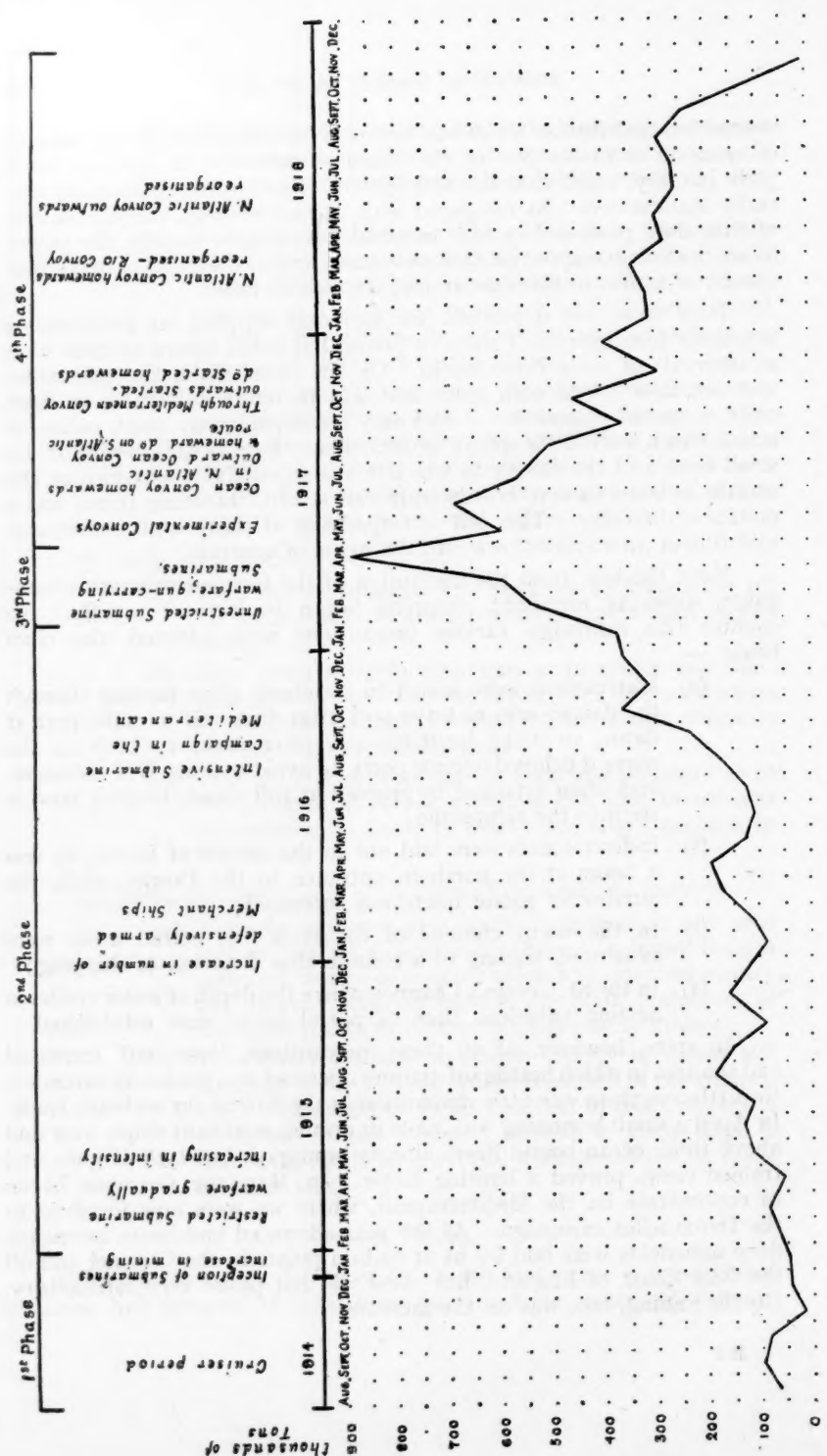
They were not dependent for fuel and supplies on promiscuous assistance from merchant ships or prizes, but could return to their base at intervals of some three weeks. On the other hand, the submarine was not then armed with guns, and was therefore vulnerable to light craft so armed; moreover it had only a comparatively small radius of action which limited its sphere of activities. Besides this, owing to its small crew and the danger to which it was exposed if it remained on the surface in waters where hostile craft were about, searching prizes was a matter of difficulty. This led to torpedoing at sight with consequent violation of international law and the rights of neutrals.

None the less, from the institution of the German submarine campaign, losses in merchant shipping began to increase rapidly. To counter this campaign various precautions were adopted, the chief being :—

- (a) Instructions were issued to merchant ships passing through the danger area to leave port after dusk and to make port at dawn, to make landfalls only after dark, to keep on the move if delayed outside ports, to avoid sending W/T messages, and when attacked to proceed at full speed, keeping bow or stern to the submarine;
- (b) Indicator nets were laid out in the Straits of Dover, as was a boom at the northern entrance to the Downs, while the number of patrol boats was increased;
- (c) In the north channel of the Irish Sea netted areas were instituted, leading to a considerable diversion of shipping;
- (d) In the St. George's Channel, where the depth of water rendered netting valueless, lines of patrol boats were established.

In spite, however, of all these precautions, losses still increased and the area in which hostile submarines operated was gradually extended. Nevertheless there was little diminution in the flow of our seaborne trade. In April a small beginning was made in arming merchant ships, over and above those ocean-bound liners already equipped, but lack of guns and trained crews proved a limiting factor. In May the Germans began to concentrate on the Mediterranean, where we were now involved in the Dardanelles campaign. As the year advanced and losses increased, deep minefields were laid by us at certain points in the Channel and off the East Coast of England, but these did not prove very satisfactory. Hostile mining, too, was on the increase.

Gross tonnage of Merchant Shipping lost Through Enemy Action in thousands of tons. (extracted from History of Seaborne Trade)



As a result the control of shipping routes was considerably tightened up, and minesweeping flotillas and net barriers increased. Homeward bound ships were instructed to call for orders at the Canary Islands, Gibraltar, or other intermediate ports.

In spite, however, of all this activity on the part of the German submarines, the losses of British shipping, though greater than during the surface cruiser campaign, were small compared with the volume of shipping involved, and there had been as yet no tendency on the part of neutral shipping to desert the trade routes, thanks in a large measure to the scheme of State Insurance, and of bunker control established in British ports or ports where coal supply was British controlled. On the other hand, however, the submarine campaign necessitated a re-organisation of our naval arrangements in the Channel and was a source of heavy drain on the Grand Fleet in respect of destroyers. By October we had become involved in the Salonika campaign, and the safeguarding of transports and store ships taxed our naval forces to their utmost.

By the end of 1915 the number of merchant ships defensively armed had been increased, the deficiency in guns and the refusal of certain neutral powers to allow such ships to sail having been overcome. As a result the ratio of losses to ships attacked fell sharply. By this time, too, tonnage shortage, due to requisition, loss and port congestion, was being felt, and the first steps began to be taken towards licensing shipping and directing it on to certain routes, an indication of the future policy of adapting routes to requirements.

During 1916 and January, 1917, losses increased, and tonnage deficiency became more acute in spite of increased efficiency of net systems, use of otters and sweeps, large increase in patrols and institution of patrolled areas in the Mediterranean, till the latter sea had to be closed to all through traffic as from 7th March, 1916. A system of patrolled areas at the home terminus of a voyage combined with wide dispersal during the ocean journey, was also adopted with some success on the Western Approaches.

From this second phase may be deduced the following lessons :—

- (1) That submarines can operate more freely on the nerve centres of the enemy's communications than surface craft, and that their power to do so will vary directly with their proximity to places where they can refuel and refit ;
- (2) That acting from their home bases or bases in neutral waters, and independent of auxiliary ships, a submarine can, during the period which its fuel, torpedo and ammunition supplies admit of, operate more successfully and continuously than a surface cruiser, without being at the same disadvantage as a surface ship opposed by a number of hostile cruisers ;
- (3) That the tendency of a submarine is to sink shipping after little search, and thus cause friction with neutrals ;

- (4) That in narrow and shallow waters net defences supported by patrol craft are an adequate if not impenetrable defence ;
- (5) That against the submarine not armed with a gun, defensive arming of merchant vessels is the soundest defence, but that such defence may lead to difficulties with neutrals, and cannot in any case be applied to neutral shipping.

THIRD PHASE.

The third phase lasted from February, 1917, up to the summer of that year, and was marked by increased violence of the German submarine campaign and the torpedoing of any ship at sight in the so-called "barred" zones, which led to an alarming increase in losses and consequent acute shortage of tonnage.

Apart from retaliatory measures against German imports, this period was marked by a distinct increase in the control of routes with a view to ensuring adequate supplies not from normal sources, but from those which involved the shortest and least dangerous passage. The period was also marked by the withdrawal of neutral shipping from dangerous areas ¹ and the imposition by us on such shipping of conditions under which cargoes of importance to their State might be obtained or ships be released from British ports, such conditions being designed to ensure carriage of essential material for our own or allied requirements.

The increased radius of action of submarines more than counter-balanced the increased efficiency of our defences, and the expansion of our auxiliary patrols. In April, 1917, submarines were operating 150 miles north-west of Tory Island, 250 miles west of the Fastnet, and 150 to 200 miles west of the Scillies, while the Mediterranean was infested, and isolated instances occurred of submarines acting off the American coast. Moreover, owing to the fact that the later types of submarines now carried guns, the ascendancy of the armed merchantman was fast fading away, as is shown by the fact that whereas in September-December, 1916, 68 per cent. of the defensively armed ships had escaped, in April, 1917, only 43 per cent. escaped. ²

Even the system of protective patrols adopted in the approaches to home ports in 1916, combined with wide dispersal during the voyage, failed, since the number of craft available was inadequate to secure the areas in which traffic began to concentrate towards the end of the voyage against the action of the more modern submarine.

¹ Neutral Entrances (1,000 tons net) British Ports :—

February, March, 1916	..	..	..	1,149
February, March, 1917	..	..	..	229

Neutral Clearances :—

February, March, 1916	..	..	..	2,293
February, March, 1917	..	..	..	600

Official History of Seaborne Trade, Vol. III, p. 53.

² Ibid, Vol. III, p. 96.

From this phase we may deduce :—

- (1) That if a belligerent is prepared to take the risk of antagonising neutrals by adopting unrestricted submarine warfare, and is possessed of a sufficient number of submarines, he can, in time, so far eliminate hostile and neutral shipping from the seas as to compel an enemy dependent for victory on shipping to come to terms, unless defensive methods other than those adopted up to the end of this phase be taken.

FOURTH PHASE.

While the opening of this phase, from the enemy's point of view, consisted only in continued violence of the submarine campaign, increased minelaying and to a small extent the use of aircraft against ships, on the Allied side it marked the time when the tonnage shortage had reached the absolute limit of endurance. This shortage was caused, not only through loss by enemy action, but by the laying up or withdrawal to less dangerous areas of neutral shipping, notwithstanding the bunkering regulations, the increased demands of our Allies for tonnage, the extension of the theatre of war, small output of new merchant shipping, and other causes.¹ To avoid collapse, drastic action was therefore necessary.

Lack of co-ordination had proved nearly as great a cause of loss of efficiency as enemy action. Although the Admiralty, as representing security of transport, had a large voice in all shipping matters, there were a multitude of other authorities interested amongst which were the War Office, Ministries of Munitions and Food, Board of Trade, Allied Missions, and various Committees and Commissions such as the Port and Transit Committee and Royal Commission for Wheat Supply. To co-ordinate the efforts of these various competing authorities committee after committee had been formed until finally a Ministry of Shipping was created, and serious efforts were made to bring essential supplies by the shortest and safest route, to co-ordinate demands for tonnage and to utilise with the maximum degree of efficiency the available cargo space.

None the less, loss of efficiency still continued and losses still exceeded output to such an extent as to render yet more drastic action necessary.² As a result resort was had to the convoy system, first on the North Atlantic and later on the Mediterranean and South Atlantic routes.

The objections to the convoy system were many. It required a large number of escorting ships which could not well be spared. It entailed delays at ports and rendezvous with consequent loss of carrying capacity. It involved loss of time *en route* owing to the necessity for adapting the speed of the convoy to that of the slowest ship. It was also doubtful if merchant skippers could keep station under war

Official History of Seaborne Trade, Vol. III, Chap. VI.

British losses, January—June, 1917 (1,000 tons gross).. .. 2,274

British output, January—June, 1917 (1,000 tons gross) 295

conditions. The convoys also offered large targets to a waiting submarine. On the other hand, so great were the losses under existing conditions, that the Admiralty gradually came to the conclusion that the adoption of the convoy system was essential.

As a result of practical experience it was gradually extended, and a system of fast and slow convoys organised. This necessitated a very complete control of all shipping, and a very close co-ordination between the Admiralty, which was responsible for providing escorts and conducting the convoy, and the Ministry of Shipping, which was responsible for arranging the voyages and destinations to suit both cargo requirements and available convoy dates, as without this close co-ordination the loss of carrying power due to delay on the round trip might well have exceeded the loss incurred by enemy action. Consequently the introduction of the convoy system involved a complete control practically amounting to requisition over all available shipping.

After various vicissitudes and partial failures, the convoy scheme proved successful, as is shown by the details given in Table on page 228.

From this phase, therefore, we deduce:—

- (1) That given sufficient vessels available for escort, the true reply to unrestricted submarine warfare lies in the establishment of a convoy system, but that the establishment of such a system premises the existence of a great superiority in light cruisers, armed liners, and destroyers;
- (2) That the convoy system, if it is to produce adequate carrying capacity, demands complete control of all national and allied merchant shipping in respect of hulls, cargoes, routes and destinations, and the maximum practicable control over neutral shipping.

Having now outlined the course of the Great War very briefly in so far as the safeguarding of our ocean communications are concerned, it remains to define the general conclusions which may be drawn from that War. These are:—

(1) As regards our main fleet—

- (a) That the defence of our ocean communications depends primarily on the superiority of our main fleet over that of the enemy, since, so long as the enemy's main fleet has the initiative, commerce protection squadrons cannot carry out their role unmolested;
- (b) That at the outbreak of hostilities our main fleet must be so strategically disposed as to enable it to neutralise the enemy's main fleet from the outset, or heavy losses on our ocean communications will result until it is able to do so;

(c) That adequate bases for repair and refuelling within easy reach of the strategic station of the main fleet must be available from the outset ;

(d) That the composition of the main fleet must be such as will not only give it superiority in battle ships, but also adequate cruisers, destroyers, aircraft and submarines to support the battleships and for reconnaissance.

(2) As regards commerce protection—

(e) That squadrons of sufficient strength to deal with any hostile forces in their area, and supplied with sufficient light craft and aircraft for reconnaissance and protection must be available from the outbreak of hostilities in the main terminal and intermediate-focal areas of our sea communications which are liable to attack ;

(f) That such squadrons must have adequate operational and maintenance bases and fuelling stations within reach of their zone of operations ;

(g) That having regard to the number of ships which can be expected to be available, the duties of commerce protection and commerce interception must necessarily be closely inter-related ;

(h) That if the defence has a reasonably adequate supply of surface cruisers for commerce protection, surface raiding cruisers can only produce temporary and local effect on trade, and that mainly at focal points, but that submarines combined with mines may, unless adequately and promptly countered, produce a permanent and decisive effect ;

(i) That where mines and submarine commerce raiders are in question, surface cruisers cannot alone secure the trade routes, but must be augmented by an elaborate system of surface and air patrols, by nets and other devices in narrow waters, and by the arming of merchant ships ; and that, even so, owing to the increased range and gun power of submarines, convoy with its corollary, controlled shipping, was at the end of the war the only reliable safeguard, notwithstanding its many drawbacks ;

(j) That as the war proceeds and theatres of war extend, the most careful co-operation is required to ensure safe transport of formed bodies of troops.

(3) As regards merchant shipping—

- (k) That as war continues, there is an ever-increasing drain on cargo-carrying vessels, not only owing to loss by enemy action or marine risks, but also owing to the growing numbers of ships taken up for government service (transports, armed liners, auxiliary craft, etc.), which may produce a crisis in our essential supplies; from which it follows that shipbuilding must be maintained at a high rate of output, even at the expense of man-power in the army, or to some extent the naval building programme, and further, that a system of co-ordinating the employment of available tonnage should be introduced at the outset to ensure that the maximum number of ships is employed on essential services;
- (l) That although interference with normal sources of supply and trade routes must involve economic disorganisation, none the less, where the enemy's destroying power is considerable, it is essential to bring supplies from those sources whence it can be moved by the shortest and safest route;
- (m) That national shipping assumes a greater importance in war than in peace, since in peace trade can be carried in neutral bottoms, if at some economic disadvantage, but in war only national shipping can be fully and directly controlled, whereas neutral shipping may be laid up or diverted to more profitable and less dangerous areas;
- (n) That fear of financial loss, rather than fear of hostile action, deters shipowners from sending their ships to sea, and that a State Insurance scheme modifies this risk;
- (o) That congestion of docks and railways has a vicious influence on the amount of shipping which is effectively employed;
- (p) That modern means of communication (cable and W/T) prove of the greatest assistance in directing and controlling shipping, but that indiscriminate W/T transmission by merchant ships is likely to lead to their own destruction by betraying their position to enemy raiders, while similar use by commerce protection craft enables hostile raiders to avoid them;
- (q) That merchant ships can be expected to keep station in convoy successfully, given additional navigational aids.

V.—FUTURE DEVELOPMENTS.

Such being the deductions which can be drawn from the Great War, it next remains to consider the developments likely to affect these deductions before the next war, and it is this aspect of the subject which offers the greatest difficulty, since there are so few stable factors on which to base a judgment in this era of mechanical progress, when one innovation now unthought of may completely alter the picture, as did the advent of the powerful submarine commerce raider in 1917-18. Nevertheless, in order to arrive at even a tentative solution of the problem, it is necessary that we should formulate it on as definite a basis as can be foreseen, and make our solution as elastic as possible to meet the unforeseen.

The main developments which appear likely are then as follows:—

(I) STRATEGIC SITUATION.

Prior to 1914 it was clear that our next potential enemy was the German Empire acting in conjunction with Austria and possibly Italy. It was also reasonably certain that in a war with Germany we should be allied with France, Japan and probably Russia, and it was in consequence possible to organise our forces and evolve strategic plans to meet such a situation.

To-day the situation is much less clear. A war which involves the safeguarding of ocean communications to any serious extent must be fought against a naval power. At the moment the three first-class Naval Powers, other than the Empire, are the United States, France and Japan, while Italy has a navy which must be reckoned with.

Although the probability of war with any of these Powers is small, we must base our defensive dispositions on the possibility of such an occurrence, and must therefore consider the strategic situations likely to arise in the event of war breaking out against one or other of these potential opponents.

Let us, therefore, in the first place, consider each of these possible opponents independently and, regarding all others as non-existent, attempt to forecast the strategic situation which would result in a war with that Power in so far as it affects our ocean communications.

(a) *War against a European Naval Power or combination of Powers.*

The strategic situation would be somewhat similar to that prevailing in the Great War, save that the weight of the enemy's naval power would lie west instead of east of the Straits of Dover, a fact which,

if it rendered the North Sea more secure, would give the enemy greater sea room and render his neutralisation more difficult. The extent to which we would be able to retain command of the Mediterranean would necessarily depend on the location of the enemy's main fleet, and its strength in relation to ours. At the best we might be able to concentrate superior forces in that sea and maintain comparatively free transit of shipping between Port Said and Gibraltar; at worst it might be necessary temporarily to abandon the Eastern route between those points and concentrate our efforts on preventing the enemy from emerging from the Straits of Gibraltar into the Atlantic, and from the Suez Canal into Eastern waters.

In any case, the Eastern Atlantic and our home waters would form the area of maximum danger in which shipping would be subject to concentrated surface, submarine, aerial and mine attack.

The extent to which our shipping in Eastern waters would be exposed to danger would again depend on the relative strength of our own and the enemy's naval forces in those waters, but taking present strengths into account we may assume that reasonable security from serious attack would be obtainable and the danger of exposure to submarines and surface raiders insufficient materially to disorganise our seaborne traffic in those waters.

(b) *War against the United States of America.*

The situation in this case would be very different. The Panama Canal would enable the Americans to concentrate their naval weight in the Pacific or Atlantic at will, though not without delay, an advantage denied to us. On the Atlantic side the width of the ocean is such as to preclude a sustained offensive by the main fleets of either Power on the enemy's side of the ocean in the absence of adequately equipped advanced bases which do not now, and are not in future likely to, exist.

The geographical situation of the United States of America, however, renders attack on our trade on the very vital North Atlantic, Caribbean and South Atlantic routes, as well as on our West Indian possessions, a comparatively simple matter, and makes the support of Canada by us an almost impossible problem while the enemy's main fleet remains undefeated.

In the Pacific conditions are somewhat similar. Our fleet based on Hong Kong, Singapore or Sydney would be unable to operate effectually on the Pacific coasts of U.S.A., and would therefore be restricted to operations in the Western Pacific against the Philippines and possibly Guam. The American fleet, on the other hand, though faced with difficulties resulting from the width of the Pacific, might conceivably carry out operations in the Western Pacific, based on Honolulu and utilising Manila as an advanced base. Such operations might, if they did no more, cause serious alarm in Australia and New Zealand, and disorganise our Pacific trade.

On the whole, therefore, it seems probable that the initiative in regard to major offensive operations would rest with the American fleet, and that we should be compelled to act mainly on the defensive in this respect. The chief feature of the war would, however, consist in very real efforts to paralyse seaborne trade, and this object would, having regard to the relative circumstances and geographical positions of the Empire and U.S.A., prove more easy of achievement by the U.S.A. than by us.

(c) *War against Japan.*

In this case we should be faced with a campaign the main weight of which must fall in Far Eastern waters, half way round the Globe from the United Kingdom, in close proximity to the enemy's main naval bases, and at no great distance from our slightly defended Dominions of Australia and New Zealand, and from India and our Pacific possessions.

To meet such a situation it would theoretically be correct (though in practice impossible) to concentrate the main bulk of our naval forces in Eastern waters in peace with a view to the immediate neutralisation of the enemy's main fleet and protection of our seaborne trade and Eastern possessions, only light forces being retained in home waters to meet the slight danger to which shipping in that area would be liable.

When, however, we consider the strategic situations arising from war against the three above-named Powers as inter-dependent, we at once observe that no one scheme of defence will entirely satisfy all the necessary conditions, since in the first case the main

danger area lies in the Eastern Atlantic and Mediterranean, in the second in the Western Atlantic and Pacific, and in the third in the Western Pacific and Indian Ocean. Consequently compromise is necessary and a strategic disposition of a fluid nature must be adopted in peace which will enable us to cope to the best of our ability with whichever situation we may be called on to meet.

Having regard, however, (a) to the vital importance of the waters round the United Kingdom, and (b) to the imperative necessity of securing a free flow of food supplies from North America, South America, Australia and New Zealand (or such of these countries as may be open to us) and, in addition, of raw materials for munitions from Scandinavia and Spain, it will obviously be desirable to safeguard the routes to these areas before attempting to reinforce others.

On the other hand, the danger to our Eastern possessions and trade is so immediate in the event of war with Japan that we cannot afford to leave only weak forces in the Far East.

(2) NAVAL SITUATION.

- (a) As a result of the Washington Conference and post-war economies, we have not only abandoned our pre-war two to one standard in capital ships¹ but are also unfavourably situated in regard to age, armament and radius of action of these ships.

Furthermore, owing to the failure to impose limitations on the building of ships of less than 10,000 tons, including submarines, and our small building programme in respect of such vessels as compared with that of other Powers, we shall before long be in a very inferior position in regard to those ships most vital to commerce protection, and that not only in the matter of numbers, but also radius of action, speed and armament.¹

- (b) Owing to post-war economies we have reduced our strength in personnel (especially officers) to a degree barely compatible with security, and have seriously jeopardised our powers of expanding our naval forces.

¹ See Whitaker's Almanac, 1925, p. 240. In regard to ships projected those allowed by the Supplementary Estimate of August last must be added to our numbers.

- (c) In any of the three strategic situations outlined above, two salient features distinguish them from those which prevailed in the Great War.
- (i) A great strategic dispersion of capital ships with their attendant lighter craft will be unavoidable.
 - (ii) Radius of action and steaming capacity will prove much more vital in regard to cruisers, destroyers and submarines, than in the Great War.
- (d) Owing to the fact that it is an invention of comparatively recent date, the development of the submarine, especially in the matter of sea-keeping, is likely to be much greater than that of surface craft, and consequently it may be expected to prove the most serious menace on our ocean communications in the next war.
- (e) Owing mainly to the factor enumerated at (d) anti-submarine defence, notwithstanding developments in wireless telegraphy and under water detection apparatus, will prove much more formidable than in the Great War.

(3) MILITARY SITUATION.

Owing to post-war economies in the Army our available strength, both in respect of Infantry and Coast Defence Artillery, has been so far reduced as to render the land defence of our overseas defended ports at the outbreak of war precarious.

(4) AIR SITUATION.

Although British blimps and seaplanes played a part in the detection of submarines in the Great War, and German Zeppelins and aircraft were employed against our surface craft and submarines, if with small success¹, before the next war, aircraft of all natures, more especially the heavier-than-air types, will have increased in radius of action, reliability and power to such an extent that they will form an indispensable element in practically every offensive and defensive operation on our ocean communications. Such being the case, there seems little doubt that we shall at the outbreak of the next war be faced with a heavy deficiency in aircraft and air personnel, as compared with certain of our potential opponents, while the centralised control of the

¹ The total British tonnage so lost was 7,912.—Official History of the War.

Royal Air Force by the Air Ministry, notwithstanding the so-called compromise arrived at with the Admiralty, must tend to enhance the shortage.

(5) GAS.

During the last war gas played no part in operations on ocean routes, but it is safe to assume that in the next war gas bombs from aircraft, and gas shell fired by naval craft will be employed, notwithstanding any conventions drawn up in peace.

(6) COMMERCIAL SITUATION.

Owing to economic conditions, the percentage of shipping under the British flag has greatly decreased in proportion to that of foreign Powers, notably the United States of America, with the result that controllable tonnage will be less than in the Great War, and losses suffered will have a greater proportionate effect.¹

(7) WIRELESS TELEGRAPHY AND RADIO TELEPHONY.

These are daily increasing in range and accuracy, while the use of W/T for direction finding is still in the comparatively early stages of development and the possibilities of beam wireless still almost unknown.

In the next war, however, these means of communication must inevitably play a far greater part than in the last war.

(8) POLITICAL.

The present political tendency when making arrangements in regard to territory is to ignore the effect of these on Empire communications. For example, the institution of the Irish Free State has established on the flank of the United Kingdom a state whose attitude can only be regarded as uncertain and one which might, in the event of war, become openly hostile. Egypt, too, though still occupied by British troops, is now independent, and capable of forming a danger point on the flank of a vital defile on our Eastern communications, while our acceptance of mandates and international obligations elsewhere might prove a fertile source of anxiety. On the other hand, however, no potential enemy except, possibly, France, is likely to be so well equipped in regard to fuelling and intercommunication centres overseas as was Germany in 1914.

¹ See Whitaker's Almanac, 1925, p. 91.

Lastly, we must for safety's sake assume that, notwithstanding conventions and international agreements, any Power which considers it worth its while to do so will find means of infringing such agreements, and will utilise every weapon, whether legal or not, which it considers likely to be an aid to victory, including unrestricted submarine warfare, the use of unnotified minefields, etc.

VI.—METHODS TO BE ADOPTED FOR SECURING OUR OCEAN COMMUNICATIONS.

Having now drawn certain lessons from the Great War, and suggested the probable trend of future developments, it remains to consider the measures which should be taken in peace and war with a view to securing our ocean communications. These measures consist (1) of those which must be taken in peace either to secure our ocean communications in peace or in preparation for securing them in war and (2) of those which must be taken for their security on and after the outbreak of war. These measures may be classified further under the following headings :—

- (1) Co-ordination of policy ;
- (2) Defensive measures.

(1) CO-ORDINATION OF POLICY.

Since the safeguarding of our ocean communications forms an integral part of our Imperial Strategy (a term applicable both to peace and war, and therefore preferable to the more usual term, Imperial Defence) it necessarily concerns numerous separate authorities in peace such as the Foreign and Colonial Offices, Dominion Governments, Admiralty, War Office, Board of Trade, etc., and where so many Departments are concerned there is always danger of delay or inaction due to failure to secure agreement, or of one Department initially concerned taking independent action, which seems advisable when considered from its particular point of view, but which may appear highly disadvantageous when regarded from the point of view of another Department. When we come to war this lack of co-ordination may not only prove disadvantageous, but even fatal. It is therefore essential that the co-ordination of our policy in regard to ocean communications should be entrusted both in peace and war to an appropriately constituted body.

In so far as peace is concerned the Committee of Imperial Defence is undoubtedly the most suitable body to which to entrust this co-ordination, subject to the approval of the Cabinet, but to ensure that the subject may be dealt with in adequate detail, a special sub-committee should be appointed on which the Foreign and Colonial Offices, Board of Trade, Admiralty, War Office and Air Ministry should be represented.

The terms of reference of this sub-committee should be "To consider and make recommendations as to all matters affecting the security of our ocean communications, both for peace and war."

The matters which would come under its consideration under the above terms of reference would include :—

- (a) The effect on ocean communications of any proposed cession, acquisition or international transfer of territory with a maritime frontage ;
- (b) Questions of international law, conventions affecting contraband, rights of search at sea, methods of naval warfare, and the like ;
- (c) Effect of foreign tariffs in ports or maritime defiles, or of proposed transfers of large blocks of shipping to a foreign flag ;
- (d) Proposed changes in the strength or composition of naval or air forces or of military garrisons abroad ;
- (e) Consideration of the defence of ocean communications and the naval, military and air force requirements therefor in all possible strategic situations likely to occur ;
- (f) Consideration of methods by which essential shipping services can be maintained and essential imports obtained in the strategic conditions arising from war against different Powers or combinations of Powers, including the selection of the sources from which such imports must be brought and the routes which must be specially secured or may, if necessary, be temporarily abandoned ;
- (g) Consideration of trans-oceanic cables and wireless telegraphy in relation to security of ocean communications ;
- (h) Preparation of the sections of the " War Book " dealing with the security of ocean communications.

Although, however, such a committee could satisfactorily carry out the role allotted to it in peace, it could not have the executive power necessary to secure co-ordination in war, and different measures must therefore be resorted to.

As the Government is the decisive authority in peace, so also must it be in war, but to secure prompt decision, the powers of the Cabinet must be vested in a small number of individuals such as the War Cabinet, created in the late War. To enable the War Cabinet to act, however, co-ordinated advice is necessary. In so far as the question with which we are concerned is at issue (intimately bound up, as it is, with the general conduct of the War), decisions are necessary on two main lines :—

- (1) Actual warlike measures ;
- (2) Measures indirectly affecting the situation such as control of shipping, etc.

Moreover, leaving out of question matters of high policy requiring the decision of the Government, constant co-ordination between departments is necessary to secure efficiency, a co-ordination which cannot be attained by normal peace-time correspondence or minute writing, or even by Committees created *ad hoc*.

It appears, therefore, that co-ordination can best be obtained by the centralisation of the control of ocean communications so far as is possible. The naval defence of ocean communications, closely inter-related as it must ever be with naval strategy generally, must always remain directly under the control of the Admiralty, while air operations at sea are also so much a part of naval defence that they should be carried out by forces completely controlled by the Admiralty and not, as at present, partially by the Admiralty and partially by the Air Ministry.

Military operations on land or air operations conducted from shore aerodromes are also frequently intimately connected with the defence of ocean communications, either actively (as those designed to defend a naval base) or passively (as those which necessitate the transport of military or air forces by sea to a theatre of operations), but although such operations concern the Admiralty intimately, naval requirements must to a varying degree be subordinated to those of the military or air forces engaged, and the Admiralty become, not the sole controlling authority, but a partner.

In every case, however, co-ordination of action is imperative, and to secure this it is extremely desirable that a combined staff should be formed prior to the outbreak of war to advise and to assist in the execution of combined operations of every sort, including those involving the transport of troops by sea, the defence of bases, landing operations, etc., etc. By this means misunderstandings and miscalculations which so frequently marred the success of operations in the last War, and which were mainly due to lack of mutual understanding between representatives of the different Services hastily thrown together to execute a particular task, will be avoided.

Turning next to the non-warlike measures necessary to secure co-ordination of policy, we at once recall the disastrous results already referred to which resulted from the too-gradual and only partial evolution of a centralised control of shipping in the Great War. It is, therefore, of primary importance that in the next war centralised control should be initiated at the outset, with which end in view a body similar to, but with wider powers than, the Ministry of Shipping should be formed on the outbreak of hostilities in accordance with a plan prepared in peace, from cadres supplied by those Departments concerned which exist in peace, under the leadership of a man of wide experience in shipping matters who should also be earmarked for the post in peace.

The functions of this Ministry should be :—

- (a) *Shipping*: Requisitioning; control; allotment of available ships to meet demands of various departments and allies; efficient use of available tonnage; State Insurance.
- (b) *Trade*: Selection of sources of supply of essentials; recommendations as to limitation of imports.
- (c) *Ports*: Capacity and efficient working.
- (d) *New Shipping*: Maintenance of output of new tonnage; standardisation of design; purchase.
- (e) *Labour*: Supply of dock and shipbuilding labour.
- (f) *Sea transport*: In conjunction with the Admiralty, arrangements for convoys, or movement of non-convoyed ships.

The creation of such a Ministry would enable the Admiralty, dealing with one instead of many authorities, to put in force a co-ordinated scheme for the security of ocean transport of all natures which would ensure a maximum efficiency as well as a maximum security.

(2) NAVAL, MILITARY AND AIR DEFENSIVE MEASURES.

The security of our ocean communications in peace involves the policing of those areas in foreign waters in which interference is possible, and the maintenance in an efficient state of hydrographic and other navigational aids and warnings. Such requirements are, however, covered by and subsidiary to those of war and can, therefore, be considered under that heading.

The measures necessary to secure our ocean communications for war are of two natures (a) those to be taken in peace and (b) those to be taken on and after the outbreak of war, and they will be discussed in that order.

PEACE MEASURES.

Firstly, then, the chief requirement for security is the provision of adequate naval and air forces to secure superiority over any potential enemy, and military garrisons for naval bases and defended ports sufficient to meet the scale of attack laid down.

In considering the naval force required the navy of the Empire must be regarded as a whole, and capital ships, as well as cruisers, destroyers and submarines, included in our estimate, since, as already shown, the defence of our ocean communications depends primarily on the superiority of our main fleet over that of the enemy.

In regard to capital ships, we have abandoned our pre-war 2 : 1 ratio of superiority, and cannot hope under existing political conditions to restore it. We must, therefore, rest content with the 5 : 5 : 3 ratio allowed by the Washington Conference, with the proviso that our

building programme must be such as will provide not only for the maintenance of that ratio in numbers and tonnage, but also for superiority in speed and armament. In other words, we must be prepared to undertake a programme of replacement which will correspond with the building and replacement programmes of other countries.

In regard to light cruisers, destroyers and submarines, we are in a less favourable position. The bulk of those we now have were built to meet the conditions of the Great War, and are lacking in the sea-keeping qualities which will be essential in the next war, where speed and wide radius of action will be all-important. Consequently, even supposing that the number of these craft which we shall possess in the near future were sufficient to furnish all the duties for which they will be required, both with the fleet and for commerce protection, etc. (which they certainly would not be), we should still be in a marked inferiority as compared with other first-class naval Powers. In respect of these vessels, therefore, a heavy replacement and additional building programme is necessary.

For armed liners, mine-sweepers and patrols we must depend mainly on the Mercantile Marine. Here again we shall be faced with a deficiency owing to the reduced ratio of British to foreign (especially American) shipping. The remedy for this lies outside naval considerations involving as it does economic and commercial reconstruction, but it will be all the more necessary, in view of the obvious shortage of suitable shipping, that the most careful arrangements shall be made in peace to secure economy in its use in war.

Naval personnel (in particular, officers) has also been reduced to a scale scarcely compatible with security, and prohibitive of rapid naval expansion. Every effort must, therefore, be made to secure an increased establishment, and to increase available reserves.

In regard to air co-operation with the Navy, the fact has already been emphasised that practically every naval operation will demand aerial co-operation. Reconnaissance and aerial protection will be a *sine qua non* for battle fleets and cruiser squadrons, and will be very valuable to commerce protection cruisers and patrols. Such being the case, two main measures are necessary, (a) transfer of all aerial personnel and aircraft destined for co-operation with the Navy to that Service, and (b) provision of adequate numbers of aircraft carriers, aircraft and personnel to man them. At the moment our deficiencies in these respects are notorious.

In regard to military garrisons, Gibraltar, Malta and Singapore must be adequately held before the outbreak of war, the latter in particular being also furnished with sufficient aircraft for co-operation with the defending force.

Secondly. The strategic disposition of our naval forces in peace must be such as will meet requirements on the outbreak of any of the wars already forecasted, to the greatest possible extent.

The present organisation of the fleet serves this purpose so far as is at present practicable. Our main strength is located in the Mediterranean, where it is centrally placed to reinforce home waters or the Far East, or to secure command of the Mediterranean, as requisite, while the Atlantic Fleet forms an adequate nucleus in home waters on which to expand after the outbreak of war, and to form a support of commerce protection squadrons in the Eastern Atlantic, while the China and Australian Squadrons form a protective screen in Far Eastern waters. It is, however, most desirable that as soon as possible the China and Australian Squadrons should be strengthened to such an extent as to enable them to ward off Japanese attacks until they can be reinforced.

The West Indies and South African Squadrons, consisting only of light forces, are suitably placed for peace protective duties, and could be disposed for trade protection as requisite on the outbreak of war.

Thirdly. Suitable and adequately fitted and defended maintenance bases must be provided for our fleets. In home waters the situation is satisfactory, but in the Mediterranean additional dock accommodation is required at Malta ¹, while in the Far East no base sufficient to maintain a fleet exists, a 12,000 mile voyage to Malta and back being necessary if any of our larger ships require docking. Consequently the completion and defence of the proposed new base at Singapore is absolutely essential to our security.

Fourthly. Sufficient stores of war material must be held in peace for the equipment to war scale of ships commissioned in peace and for reserve and auxiliary craft to be commissioned on the outbreak of war, as also for arming merchant vessels defensively, and for anti-submarine defence of areas liable to attack.

Fifthly. Complete and detailed arrangements must be made for the mobilisation of the Fleet and for its movement to war stations, as also for the taking up of all vessels required to supplement it.

Sixthly. The Naval Intelligence Service must be maintained at a high standard, and work in the closest co-operation with those of the Foreign Office and War Office.

WAR MEASURES.

Turning next to the action required to secure our trade routes on and after the outbreak of war.

¹ A new floating dock, now in course of erection, will improve matters in this respect.

Firstly. Our aim must be the neutralisation or defeat of the enemy's main fleet. This presupposes concentration of superior forces to oppose that fleet. In the Great War, when our bases and those of the enemy were not far apart, this neutralisation could be achieved by constant watch maintained by submarines, destroyers and light cruisers, supplemented by the Intelligence Service, and supported by the battle fleet in harbour ready to move at short notice. In the next war we cannot, however, hope for such favourable conditions. Even if we accept the lesson of the Great War that an inferior force will avoid action with a superior one, the task of neutralising the enemy will become more difficult and uncertain as the distance between our own and the enemy's bases increases until we arrive at a point when any form of blockade will be impracticable. The main fleet will be compelled to protect our ocean communications by supporting our commerce protection squadrons and convoys in those focal areas most exposed to attack by the enemy's heavier ships, and by taking any opportunity to attack which the enemy may offer in making a descent on those areas.

To illustrate the point it is only necessary to consider, on the one hand, the neutralisation of a French fleet based on Toulon by our Fleet based on Malta, and, on the other, the neutralisation of an American fleet based on the Atlantic coast of U.S.A. The first case reproduces, broadly speaking, the conditions of the late War. In the second case, our Fleet, based on home ports and the Mediterranean, could not conceivably form any sort of blockade, but would be best employed in supporting our cruiser squadrons in the Atlantic, on the Cape, Eastern and South Atlantic routes, and watching for a chance to attack should opportunity offer.

Secondly. The focal areas on the trade routes must be secured. In the Great War hostile action in these areas was confined to the operations of isolated cruisers and submarines. In the next war, however, commerce interception will be mainly carried out by ocean-going submarines usually acting in conjunction and at times supported by cruisers. The effect of this change will be to increase very greatly the extent of the danger areas on the trade routes, and to render them much less easy of determination, especially if minelaying by submarines be undertaken by the enemy.

Consequently, while it will still be necessary to establish cruiser patrols in focal areas, they will have to be supported by ocean-going destroyers for protection, and by seaplanes for reconnaissance, and will even then prove a by no means unpenetrable defence against hostile attack, while the risk of losing cruisers will be much greater.

It will therefore be desirable to reduce as far as possible the number of cruisers employed on this service by restricting the number of patrolled areas so far as is consistent with security of vital routes and the interception of hostile shipping. Any cruisers rendered available by such

economy could then be utilised in the creation of an effective convoy service through danger areas.

Thirdly. Prompt arrangements must be made for anti-submarine defence of naval bases and defended ports within the danger zone, as well as for the defence of narrow waters against submarine and mines. These defences should follow in the main those in use at the end of 1918; booms, detector nets, patrols of small craft, etc., coupled with the use of directional W/T and sweeping being the chief means of defence other than certain secret devices of later date.

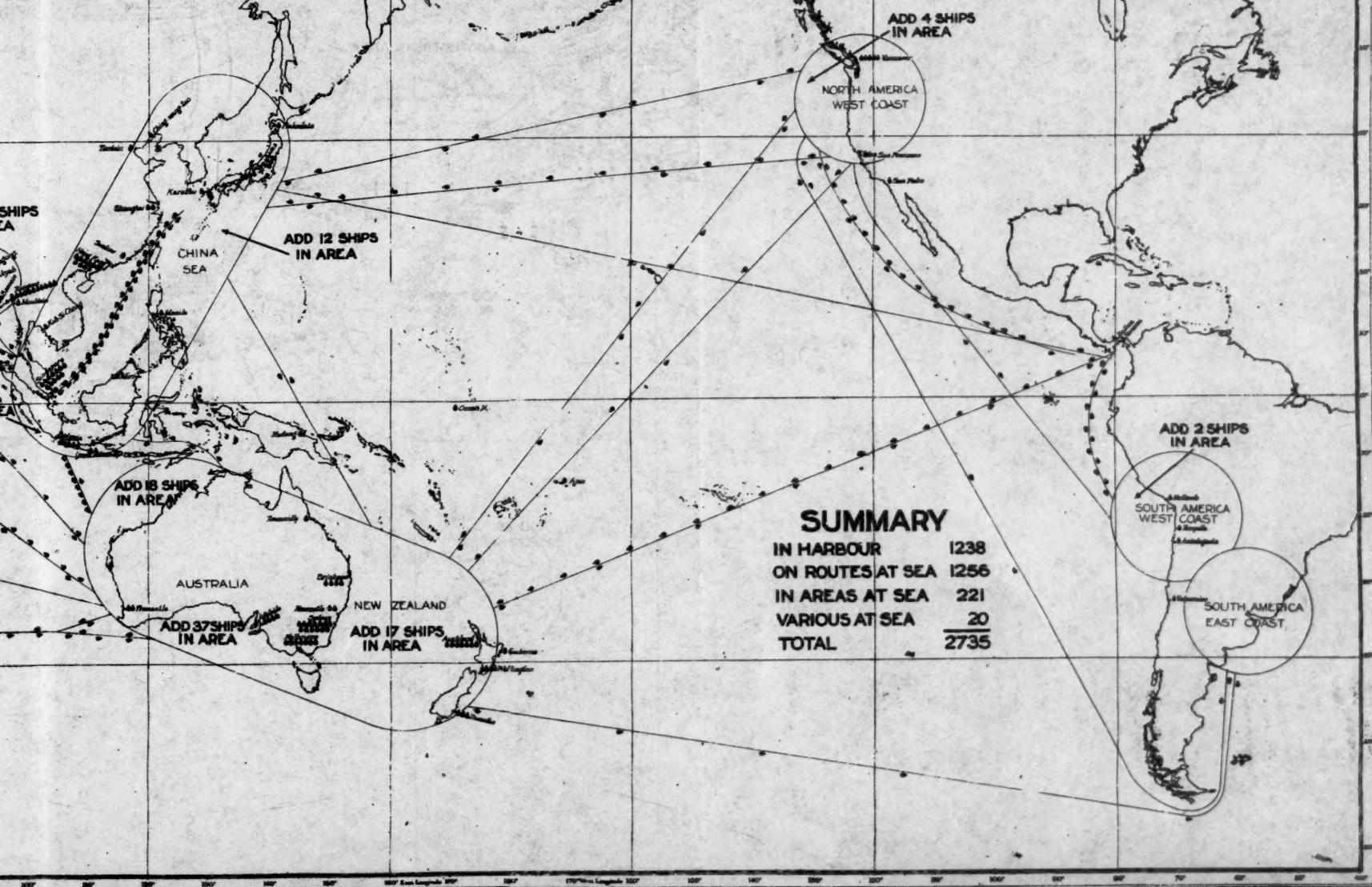
Fourthly. Complete arrangements must be made for control of shipping and for convoy. With regard to control of shipping, we have already discussed the non-naval side of the problem. From the naval point of view the first general essential is that all shipping should receive and carry out implicitly, orders issued by the Admiralty as to times of sailing, routes, lights, etc., and arrangements for communication of such orders through Lloyds agents, consuls, etc., must be carefully thought out.

In areas of minimum danger, i.e., those liable to attack only by isolated surface cruisers or single submarines, experience in the Great War showed that if orders issued by the Admiralty or S.N.O. in the area were faithfully obeyed, the risk of loss was small and insufficient to justify the employment of escorts, except in the case of ships carrying troops or cargoes of exceptional importance, and no development at present foreseeable suggests that the same will not, in the main, hold good in future.

When, however, we come to the true war area, in which the enemy is making a serious effort to interrupt traffic, the picture changes. Even in the last eighteen months of the War the submarine had forced on us the use of the convoy system, and in the next war the menace of more modern submarines coupled with aerial attack will render this infinitely more necessary. The main difficulty will arise from the lack of suitable escorting vessels, even if, as suggested above, the number of light cruisers and armed liners on patrol in focal areas be reduced. The ruling factor, therefore, will be the possibility of providing escorts. To assist in this, fast cargo-carrying liners should be offensively armed and utilised as escorts for fast convoys which are least exposed to danger, while destroyers should be utilised as escorts to the limit of their sea-going capacity, but bearing in mind the fact that some modern submarines carry a heavier armament than a destroyer.

Convoys should be organised on the basis of about twenty ships each, with an escort of two warships, and classified as fast, medium or slow. Arrangements as to rendezvous, etc., similar to those employed on the North and South American routes in 1918 should again prove satisfactory.

ATOMIC CHART OF
ION MERCHANT SHIPPING
3000 TONS GROSS
AND ON THE PRINCIPAL
S OF THE WORLD ON
1923



SUMMARY

IN HARBOUR	1238
ON ROUTES AT SEA	1256
IN AREAS AT SEA	221
VARIOUS AT SEA	20
TOTAL	2735

The aerial defence of convoys will, however, prove an additional difficulty in the next war. Such convoys will be liable to aerial attack at all times within 300 miles of a hostile shore aerodrome, or within a rather shorter distance from a hostile squadron of warships. Escorting cruisers cannot carry aircraft sufficient to beat off such an attack, nor in the case of a concentrated attack on a large convoy will their anti-aircraft guns prove effective. It is therefore desirable that convoys should pass by night through an area known to be subject to aerial attack and displaying the minimum lights compatible with safe navigation. At other times they must depend for escape on speed and sudden variations of course, combined with the fact that a merchant ship offers but a small target to an aerial bomb.

CONCLUSION.

In conclusion, therefore, taking into account the lessons of the Great War and probable future developments, strategic and material, the means by which the Ocean Communications of the Empire can best be secured are :—

- (a) Co-ordination of policy in peace and war ;
- (b) Naval and aerial supremacy ;
- (c) Sound strategic disposition of our forces ;
- (d) Control of shipping and full development of the convoy system.

SECOND PRIZE ESSAY.

The winner of the Second Prize Essay is Commander R. D. Binney, R.N., who, until recently, had been lent to the Royal Australian Navy.

SPECIAL MENTIONS.

The essays of the following writers are reported by the Referees to be deserving of special mention :—

- Major D. McA. Hogg, Royal Engineers ;
- Lieut.-Commander A. H. Maxwell-Hyslop, R.N.

REFEREES' REPORT

The Referees in their report make the following remarks on the twenty-seven essays submitted :—

In our opinion, the essay which we consider the best, viz., No. 9, "Ships, More Ships!" is worthy of the Institution's Gold Medal.

We consider that, on the whole, the essays show that a great deal of care, attention and hard work has been expended in their compilation, and that the subject is one which has evidently evoked considerable interest.

At the same time we should like to point out that the tendency appears to be somewhat in the direction of dwelling too much on past experience without fully using the lessons thus gained to anticipate the circumstances which may arise in future.

There is consequently a certain lack of definitely constructive proposals, and not much originality of thought and ideas. Historical lessons have sometimes been used, either in the form of "padding," and thus leading nowhere, or else there has been an inclination to state them without showing the bearing they might have on the present problem.

(Signed) G. T. C. P. SWABEY, *Captain, R.N.*

DAVID NORRIS, *Rear-Admiral.*

RICHARD WEBB, *Vice-Admiral.*

(NOTE.—See also Report of Annual General Meeting at the end of this JOURNAL.)

AIR FORCE ESSAY, 1926.

The subject of the Essay for 1926 is :—

"But this much is certain, that he that commands the sea is at great liberty and may take as much and as little of the war as he will, whereas those that be strongest by land are many times, nevertheless, in great straits."—Bacon's Essays. Discuss the extent to which the above may be modified by the advent of air power.

Full particulars of the conditions governing competitors were given in the JOURNAL of November, 1925; copies can be supplied on application to the Editor.

WAR READINESS OF THE MERCHANT SERVICE

By CAPTAIN FREDERIC E. STOREY, R.D., R.N.R.

IN an article on the "Defence of our Merchant Ships in a Future War," published in the JOURNAL of May, 1925, the present writer dwelt on the new dangers which are likely to be met with and the need for training officers of the Mercantile Marine in time of peace, so that that Service may not be found wanting on the outbreak of hostilities. Moreover, it was urged that we ought to revert to the old-time practice of giving our "common carriers" a permanent armament, only this should now take the form of one or more guns of a type capable of being used against aircraft as well as for defence against surface targets.

It was urged that these and other measures should be taken as proper precautions against the defenceless state in which war would otherwise find our merchant shipping, a state which would continue until they had been armed and their personnel trained, and until the naval organisation for defence of the sea routes was complete.

This question of the war efficiency of the Mercantile Marine should be regarded as a matter of national insurance no less than the readiness of the fighting Services, for it is too vital a question to be deferred in the hope that the "evil day" will never again arrive. The following suggestions with regard to the training of the officer personnel amplify the previous proposals. It will be noted that they apply essentially to Merchant Service officers who do not belong to the Royal Naval Reserve, and who are therefore, at present, debarred from obtaining even an elementary knowledge of gunnery or instruction in handling their ships, whether in a convoy or in single company, in the presence of an enemy, whether submarine, surface vessel or aircraft.

In the late War the permanent Royal Naval Reserve proved too weak, numerically, and eventually thousands of temporary officers had to be enrolled for every branch of the Naval Service. Nevertheless, the ships from which these officers were recruited eventually became the main target of the enemy's sea warfare, and how near the breaking point this brought us in 1917 is, to-day, although a matter of history, a fact which is in imminent danger of being forgotten.

TRAINING OF THE OFFICER PERSONNEL.

In the article referred to it was suggested that arrangements should be made at the great ports around our coast for the training of Merchant Service officers in all duties appertaining to the defence of their ships in war time. These arrangements should include classes of instruction for candidates for Masters' and Mates' Certificates in elementary gunnery and kindred subjects. If a proper standard of knowledge of these matters was required in the Board of Trade examinations a great advance would be made, and we should not have to repeat the frantic efforts to cram into middle-aged and elderly shipmasters knowledge which might be vital to the safety of their ships, and which they might be required to put to practical use within a few hours of it being acquired.

With regard to these classes, the following syllabus should not prove to be too ambitious, or unsurmountable from an economic point of view :—

- (a) A course of Loader Drill, and Sight Setting ;
- (b) Instruction at the Spotting Table, and if possible, some shooting practice with Morris Tube or Aiming Rifle ammunition ;
- (c) A series of lectures on up-to-date methods of handling ships in convoy, and against any form of attack liable to be met with by a ship in company with others or in single company ;
- (d) The care and maintenance of anti-gas equipment ; also the action to take during a gas attack, and after one has been delivered, either at sea or in port.

Knowing my brethren of the sea, I feel confident that any facilities offered on the above lines would be eagerly taken advantage of. The course would not carry any emolument ; it should at first be of a voluntary nature, and later be obligatory, on the same lines as the First Aid Certificate, which has already been introduced into the Board of Trade examinations.

How important is this peace-time training will be better realised when we consider that at the outbreak of war and for some time afterwards, merchant ships will often be called upon to fend for themselves. During the early stages of hostilities the Royal Navy and its Reserves will be largely occupied in seeking or containing the enemy's fleet and merchant shipping, while our margin of superiority in naval strength is now not such that we can expect to have adequate numbers of warships to guard even the focal areas round our coasts until very many auxiliary craft have been taken up, armed, fitted out and commissioned, all of which takes time. These courses should, therefore, be part of the ordinary curriculum of the training of the officers of the Mercantile Marine.

Another great advantage this training would give is that it would promote a better understanding and closer association between the Mercantile Marine and the Royal Navy, and would enable each to appreciate more fully the other's difficulties and responsibilities.

A new and formidable menace to merchant shipping has arisen with the increased range and offensive powers of aircraft. The Air Ministry are offering short service commissions to junior officers of the Merchant Service. This should enable the latter to appreciate the danger of air attack and so combine "air sense" with "sea sense." Their experience will be especially valuable if, as may be expected, at the expiration of their term of service in the Air Force, such officers return to their sea profession.

READINESS OF MATERIEL.

The construction of merchant ships in relation to the requirements of war is also deserving of attention. One of the first needs may be transports for the Army. Here we should at once find an alarming number of ships which would require extensive alterations and additions to enable them to function in this capacity under modern conditions.

About ninety per cent. of the ships of the cargo type would have to be eliminated at the outset, owing to their inability to compete with heavy lifts; that is to say, vehicles such as the mechanicalised army of to-day will use. The average cargo ship cannot deal with lifts over ten tons without much reinforcing of decks, masts and winches. The whole of our first-class liners must also be ruled out, except as troop carriers. This leaves a very few of the cargo-passenger type of ship which may be capable of lifting weights up to fifteen or twenty tons with their own appliances; but many of these ships may be too deep draught for some of the available ports of disembarkation.

We cannot always be sure of having at our disposal well-equipped quays or wharfs at which ships can haul alongside and have their heavy lifts taken out by wharf cranes or sheer-legs; moreover, the enemy's air force may be able to see to it that such important places receive special attention. A well-placed bomb on the harbour power station would put all the dock cranes out of action for a week, at least, when our transports would be unable to discharge their heavy vehicles, guns, tanks, etc., except perhaps in very slow time, and the Army would be seriously handicapped at the outset.

Another important consideration is that of fuel oil, which is likely to cause much anxiety soon after hostilities open, because the tank steamers under British register will not be able to keep pace with war requirements. It has recently been estimated that there are three million tons of obsolescent shipping under British colours; therefore in the near future a mercantile building programme must be projected, and it

would be well if some thought was given now to construction from the point of view of providing for war readiness. The following items readily suggest themselves :—

- (1) Provision for a defensive armament and consideration of adaptability of compartments, ventilating trunks and hatchways for stowage and supply of ammunition to the guns in war ;
- (2) Local strengthening of decks, and other provision to enable the ship to deal with heavy lifts by its own appliances ;
- (3) During the initial stages of construction certain bulkheads in ships, which are to be earmarked as transports, and the double bottom tank tops to be made oil-tight.

It is estimated that the extra weight these preparations would place in the ship and the proportional reduction in the vessel's carrying capacity would be, for the average ship of 6,000 tons burden, about 70 to 80 tons. For this, compensation could be made to the owners by altering the load line ; this would not exceed more than two inches in the average full-formed cargo ship. The additional cost for building ships as suggested would be trifling when compared with the expense of altering them—as they certainly will have to be altered—for service during war time.

INDUSTRIAL STRATEGY

By CAPTAIN G. MACLEOD ROSS, M.C., M.Eng., A.M.Inst.C.E., R.E.

IN the book of doctrine it is written :—

“ Success will depend as much upon the arrangements for rapid mobilization and concentration, *and upon the organization for keeping the army supplied with its daily requirements in personnel and material*, as upon the skill with which the operations are conducted ” (F.S.R. Vol. II, Sec. 5, 6) ;

and again :—

“ A successful decision at the outset of a campaign is so important that it will undoubtedly be sought for.” (F.S.R. Vol. II, Sec. 8, 1.)

Modern methods of production and transportation have made possible the employment of forces and an expenditure of munitions on a scale never before dreamed of. Since existing and “ potential mechanical developments have increased the possibility of carrying out offensive operations of a rapid and highly mobile nature, such operations are to be expected at the opening of a campaign.” (F.S.R., Vol. II, Sec. 8, 1.)

In the face of the greatest military danger which can arise, the requirements of the British Imperial Army do not differ materially in form or degree from those of the more centralized powers. The British Empire, however, is faced with problems differing widely from those of any other great Power owing mainly to the dispersion of population, resources and responsibilities. The necessity for a scheme for rapid mobilization has long been recognized by the Fighting Services, but the tremendous importance of a scheme for the mobilization of the whole resources of the Empire has been more recently taken to heart. In the Great War, the resources of the Empire were co-ordinated to the ultimate aim by a system of trial and error, and if considerable success was eventually attained, there can be no doubt that next time an organization will be required which will co-ordinate the maximum effort in a shorter period and to a greater degree of efficiency.

Whatever the preparations made in peace for an expansion of Imperial resources to meet a war of the first magnitude, the urgent need for financial economy will insist that the immediately available fighting forces shall be a minimum conducive to safety. It is still clearer that

the better prepared the Empire is to mobilize, and the more rapidly it can effect that mobilization, the smaller will be the immediately available covering forces required—these forces being the permanent premium for the insurance of the Empire's safety. However rapid the Imperial mobilization, there will, nevertheless, be an interval during which the trained regular forces of the Empire will be required to cover the mobilizing Empire, and possibly to fight for a "point d'appui" from which the Imperial forces can assume the offensive.

It is also well to remember a lesson of the Great War, and to realize the moral effect on other Powers of a well-oiled mobilization scheme which can in no way compromise the question of disarmament, but is rather brought into greater prominence as a consequence of it.

Whilst conditions of modern war on a grand scale have, therefore, demonstrated :—

1. The necessity for the development of the full resources of man-power and material of the belligerents ;
2. The necessity for mobility and the importance of an early decision ;

financial stringency has reduced Imperial standing forces to a minimum. The degree to which the following proposals shall be applied to any particular portion of the Empire will depend upon an agreement between the Home Government and the portion concerned. Any decision will, however, be the result of a balance between the resources of that portion of the Empire in man-power and raw materials, the transportation facilities available, the degree of development of production and the locality of the theatre of war.

Since the demands of the Empire at war are more definitely known than are the commercial demands in peace, it is not only essential, but possible, to establish certain controls. These are :—

1. Control of Personnel and Labour.
2. Control of Industrial Production.

These two will be dealt with at some length.

Other controls which war has shown to be essential for the maintenance of the Fighting Forces and the civil population are :—

3. Control of Raw Materials, which is essential, not only for production of material for the fighting forces and to ensure the continuance, with limitations, of the normal peace-time commercial activities of the Empire, but also to ensure the efficient blockade of the enemy.

The question of supply and the development of raw material sources in peace, so that the Empire shall be self-supporting in war, requires separate treatment, and will

not be dealt with here. Suffice it to point out the necessity in peace for economic intelligence as to the sources. Next, to prepare for the security of those sources and the routes joining them to centres of production by means of armament, agreement, or diplomacy. Finally, to perfect a plan for their efficient exploitation in wartime to fulfil the needs of production.

4. Control of Foreign Commerce is a further weapon in the armoury of blockade.
5. Control of Fuel and Power.

Power is the life-blood of production. The conditions which a state of war imposes should not be altogether ignored in determining the peace-time development of power, and in war the main preoccupation will be the conservation of power, since in the case of those sources of power, i.e., coal and oil, waste will react detrimentally to the transportation resources, and, in the case of coal, to the diminished labour resources of the Empire.

Research¹ to find efficient methods of gaining and using the fuel must be undertaken in peace time so that production costs may be kept low. It will also be advisable to develop alternative sources of power—water and tidal. The establishment of low temperature distillation of oil from coal on a commercial basis will do much to re-establish the economic position of Great Britain, and it will re-invest her with an instrument for bargaining with neutrals which has been lost to her with the decline in the utility of coal. The importance of siting power plant in peace time with a view to greatest over-all efficiency must not be overlooked.

6. Control of Transportation.

The first principle governing the design of a transportation system is that it shall be uniformly proportioned throughout. To attain the co-ordination of the various agencies forming the system, unity of control is essential for its operation. Only by unity of control can maximum efficiency of effort be attained.

7. Control of Communications.

The Great War has shown the possibilities of propaganda and its effect on the morale of belligerents. It is essential

¹See Report of Coal Commission, 1926, and article in "Times" of 22nd March, 1926, in "Progress of Science" Column.

that the mediums of intercommunication—post, telephone, telegraph, wireless broadcasting, etc.—should be controlled.

8. Control of Capital.

This becomes necessary to ensure financial stability and to support the credit system.

9. Control of Prices.

Prices and wages must be controlled by agreement or coercion, to prevent profiteering and its attendant demoralizing influences.

10. Control of Food.

Since the price paid for labour is to be stabilized, a sufficient and reasonably priced supply of food must be available for both the civilian population and the fighting forces.

It can readily be seen that most, if not all, of these last eight controls are directly auxiliary to the control of production. It is proposed to treat the question under the following heads :—

The Control of Personnel.

1. The Covering Force.
2. Mobilization of Personnel.

The Control of Production.

1. Reserves.
2. Mobilization of Industry.

THE CONTROL OF PERSONNEL.

1. The Covering Force.

The necessity for a covering force to secure Imperial mobilization has been referred to above, and it is only proposed to deal briefly with the responsibilities of that force as affecting a war of the first magnitude. Broadly speaking, its size depends on the time necessary for the Imperial Forces to mobilize, train and equip.

The strength of the contingents to be found by the different communities forming the Empire will vary according to circumstances, and will be the subject of an agreement arrived at between the Home Government and the governments of the Dominions overseas, of the Crown Colonies, and of India. The organization, equipment and training of these contingents should, as far as possible, follow a common standard, as far as possible, throughout the Empire.

The organization of this force, which includes all three Services, will embrace :—

1. The Covering Force.
2. The reserves of personnel necessary to maintain wastage in action.
3. The framework, manned by a semi-trained cadre, on which the expansion of the full resources of Imperial man-power can be effected.

Its training will be regulated :—

1. Towards its ultimate object—the security of the mobilizing Empire.
2. To supply a training cadre for the man-power of the Empire allotted to the fighting forces.
3. Towards the perfection of a system of mechanical training which shall enable the man-power of the nation to take its place in one or other of the three Services in a minimum of time.
4. Towards the maintenance of an up-to-date doctrine.

The Higher Command will be charged not only with the employment of the Covering Force, but also with the preparation of plans to call up, accommodate, and move the proportion of the man-power allotted to the fighting services on the declaration of war.

2. Mobilization of Personnel.

To ensure the quick and efficient utilization of the resources in man-power, there are two main requirements :—

1. Information.
2. Control.

Information.

Information is necessary if economy of force is to be ensured. The ideal to be aimed at is that each man shall be employed as best furthers the ultimate aim. It is necessary then that the capabilities of every man shall be known, and this can only be attained by means of a system of registration. The system must permit of a decision as to which of the two main divisions shall employ a man, i.e., fighting forces or industry. Next, it will be advantageous to decide in peace time in which sub-division of the two main divisions a man shall serve. Finally, it must be generally decided in what capacity in that sub-division a man shall act.

The following diagram illustrates the information required.

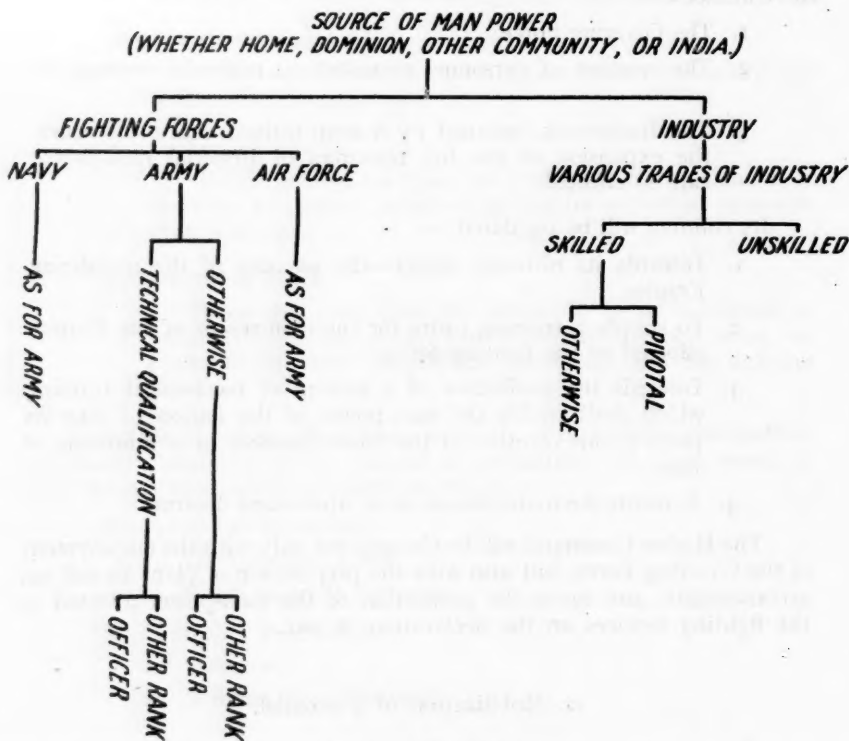


Figure 1

**ILLUSTRATING THE DEGREE OF CLASSIFICATION TO BE
MADE IN PEACE AS A RESULT OF INFORMATION GAINED
FROM THE NATIONAL REGISTER FOR EVERY FIT MALE.**

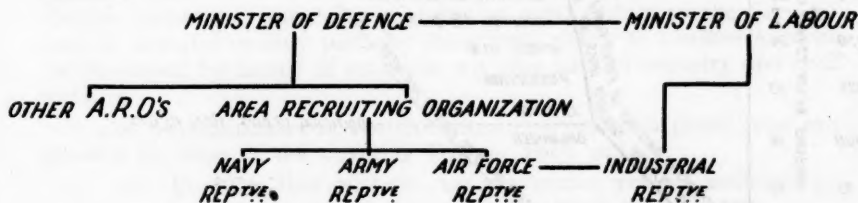
In considering the special case of the Home Army, it must be remembered that the Territorial Army, which is the frame on which expansion will take place, has its divisions located according to the concentration of man-power within the Kingdom. It has been represented that the areas supplying these divisions do not correspond with the county and police areas, necessitating a readjustment of these boundaries before a national register can be taken.

Control.

War differs from peace in that the war requirements of the Empire can be more definitely known than can the peace requirements of commerce. In war, quick action is required; compromise and debate lose their values, and the dictator is necessary *to ensure unity of effort towards the attainment of the common object*. Success will be dependent on the power to say to any man "Serve there," and to ensure that he goes. On the declaration of war, involving the development of the maximum resources of the Empire, Universal Service must, therefore, be established with that declaration.

Organization.

In the Great War the distribution of males of military age between the Services and industry was approximately 57 per cent. to the former and 43 per cent. to the latter, whilst the division between the Services was Navy 9 per cent., Army 85 per cent., and Air Force 6 per cent. These proportions, whilst forming a suitable basis, will require modification as developments occur, and it is of importance that they should be correctly re-estimated from time to time to agree with the doctrine which will govern the combined employment of the three fighting Services and industry.

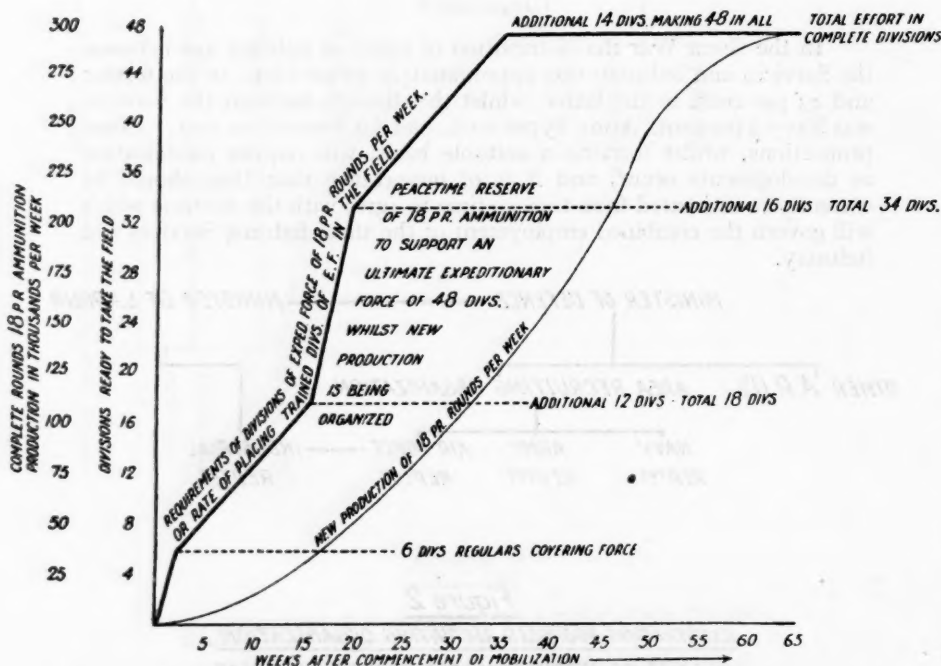
**Figure 2.**

**ILLUSTRATING PROPOSED RECRUITING ORGANIZATION,
IN EXISTING TERRITORIAL ARMY OR OTHER AREAS.**

The case for the appointment of a Minister of Defence is probably stronger in war than in peace, when the conflicting claims of the fighting Services and industry will be more prominent. It is clear, however, that a central authority, empowered to give decisions as to the proportion of man-power to be allotted to each Service is very necessary. In the light of war experience, the available man-power must be called up for the Services as and when required, i.e., when accommodation, equipment, and training facilities have been arranged.

In war, it will be convenient to have a recruiting agency in each Territorial Army area, whilst each area will have representatives of the three Services and of industry. The recruiting agencies will call up men in proportions and by categories directed by the Minister of Defence, and will pass them to their respective training centres. The heads of this organization in each area will be able to settle locally questions regarding the form of service to be undertaken by individuals which the National

Figure 3 GRAPH TO ILLUSTRATE RELATIONSHIP BETWEEN REQUIREMENTS, RESERVE AND NEW PRODUCTION FOR AN EXPEDITIONARY FORCE OF 48 DIVS.



Register has insufficiently investigated. The industrial representative will be in a position to advance the claims of local labour, and to arrange for such transfers of labour as may be found necessary by the Controller of Labour.

CONTROL OF PRODUCTION.

Although the production of material for the Army is alone considered in any detail here, it must be remembered that the essence of any national or Dominion production scheme is that production for the

three Services shall be co-ordinated under a Minister of Munitions, so as to prevent overlapping and waste. In addition to the requirements of the other Services, the arrangements to ensure, as far as possible, normal commercial activity must not be forgotten. Requirements, Reserve and New Production are all interdependent. This is illustrated in Figure 3, in which the requirements of the Army are based on a rate of mobilization and training suggested by Captain L. I. Cowper, O.B.E., in his R.U.S.I. Gold Medal Essay for 1924.¹

I. Reserves.

In a country whose industries are so highly organized as are those of the United States of America, it has been estimated that it will take twelve months before appreciable quantities of new munitions will reach the front. (Brig.-General W. S. Peirce, speaking to the Army War College on 22nd January, 1923.) This fact not only emphasizes the necessity for an organized production scheme, but it also shows the necessity for a large reserve of munitions to be built up and turned over in peace time. The more rapidly new production can supply war requirements, the smaller will be the peace-time reserve required. This reserve will be produced by Government arsenals and establishments, whilst a proportion will be put out to civilian firms so that as far as possible there will be a nucleus of firms accustomed to munitions work. Certain industries, supplying material of vital utility to the Services but of doubtful or only partially recognized utility to commerce, must be developed by means of subsidies, e.g., the aircraft industry and civil aviation.

The responsibilities of the Government arsenals in peace time are parallel to those of the Covering Force. They will :—

- (a) Produce, that is, build up a munition reserve sufficient to bridge the period necessary to mobilise the industries.
- (b) Provide, that is, by research and design, keep equipment and munitions up to date, the design being influenced so that production by commercial plant is facilitated.

Later reference will be made to the work of the arsenals.

2. Mobilization of Industry.

Since it has been found that men can be trained more quickly than they can be equipped, it is apparent that a scheme to ensure rapid production is essential for their employment in the field at the earliest possible moment. It has also been noted that early production development will reduce the peace time reserve required. The two essentials for a production scheme are :—

- (i) Information as to the requirements.
- (ii) A plan to meet those requirements.

¹ " R.U.S.I. JOURNAL " for May, 1925.

The requirements of the Army are mainly dependent on :—

- (a) The rate of mobilization and training of personnel.
- (b) The reserves of material.
- (c) War establishments of men and material.
- (d) Scales, allowances, rates of fire, percentages of wastage and repair.

The experience of the Great War emphasized that principle of organization which orders centralization of control with sub-division of labour and decentralization of responsibility. This means that whilst provision (design, specification, estimation of demands) shall be centralized, production (negotiation and preparation of contracts, production, inspection and disbursement) shall be decentralized.

The next step is to divide up the country by areas, and since production is dependent on power, and power, in the case of the United Kingdom, means coal, the areas will correspond to the coalfields of the country. A division into seven areas, for the purpose of illustrating this article only, might be as below :—

Scottish.

Northern (Northumberland and Durham and North Lancashire, Cumberland, North Yorkshire).

Western (Lancashire, Cheshire and North Wales).

North Midland (South Yorkshire, Derbyshire, Staffordshire, Nottinghamshire, Leicestershire, Lincolnshire).

South Midland (Worcestershire, Warwickshire, Oxfordshire, Gloucestershire, Berkshire, Buckinghamshire).

South Wales.

London (with Kent).

The organization is best illustrated by the following diagram.

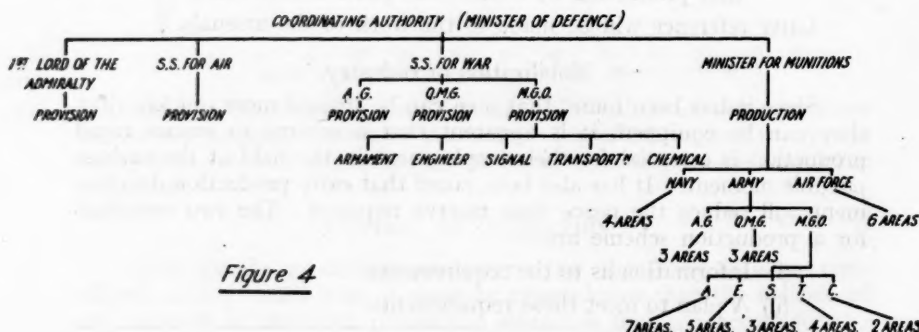


Figure 4

This shows that whilst each Service must be responsible for its own provision, a co-ordinating authority is necessary to decide priority on which production shall proceed. Production is decentralized by districts, but representatives to supervise all the sub-divisions of each Service will not necessarily be required in every area. (See Table A.)

AREA	NAVY	A R M Y							AIR FORCE
		A.	Q.	ORDNANCE					
				ARMY	ENG.	SIGS	TSP	CHEM	
1	X			X					
2	X	X		X	X				X
3		X	X	X	X	X	X	X	X
4				X	X		X		X
5	X		X	X	X	X	X		X
6	X			X	X			X	X
7		X	X	X		X	X		X
TOTALS	4	3	3	7	5	3	4	2	6

NOTE. Crosses show Areas in which there are PRODUCTION Representatives.

TABLE A.

The functions of the provision and production branches may now be considered.

The Provision Branch.

Whilst in peace the arsenals will be responsible for research and design and the bulk of production, in war, probably ninety per cent. of the production will be undertaken by commercial firms. The arsenals will also be charged with the training in peace of personnel, to be regarded

as pivotal, for the assistance of commercial firms in time of war, to enable them to carry out such branches of munition work as are not capable of reduction to conform to normal commercial practice.

Design.

Design and specification must first ensure that the article is suitable for the proposed use and secondly the design must be adaptable to existing commercial methods of manufacture. A good example is the new 330-h.p. A.D.C. "Nimbus" Aero Engine. This engine was designed so that in an emergency it could be produced in vast quantities. It is claimed that any motor manufacturer could turn his works on to the manufacture of the "Nimbus" in a short time.

Whilst existing equipment and material should be gradually altered in design to facilitate commercial manufacture, new equipment must be based where practicable on a type favoured commercially. This results in the triple benefit of easy reproduction in war time, the existence of a permanent reserve which can be commandeered should the emergency arise, and a reduced cost. The cross-country vehicle is an extreme case. Its general characteristics are essential to the Army, whilst it is hard to see that it will be commercially useful on any appreciable scale at home. The necessity arises for ensuring its acceptance in the Dominions, where its utility is greater, on a scale sufficient to sustain as large a home industry as possible. It is also essential that the tests of the designed article should be exhaustive to prevent any alteration, however slight, after the article has been passed to the production branch.

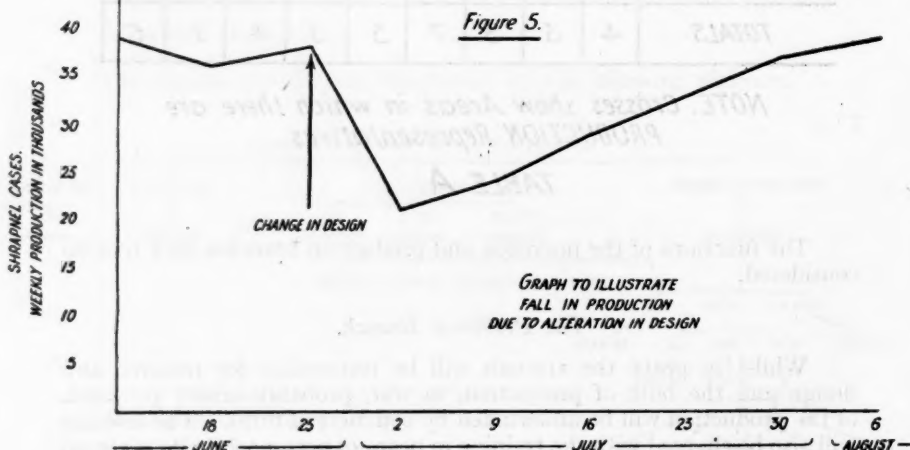


Figure 5 shows the effect on production of shrapnel cases when the French 75mm. gun replaced the American 3-in. weapon. For the shrapnel case this meant a decrease in external diameter of .05 inches and a correspondingly slight decrease in the cavity diameter. These changes are entirely in the machining. There were no forging changes whatever. The cases were being produced very successfully by an American firm which had been established about eighty years, and which had had three years' experience making munitions for the French. The firm made every possible preparation to change over with the minimum of delay. New gauges and fixtures were on hand and everything was set for the change which was put into effect about 1st October, 1917. It was anticipated by the firm that there would be no falling off in production. The delay due to this slight change is estimated as equivalent to the loss of nine whole days' production. It was entirely due to the difficulties incident to getting lathe hands and other operators into production on very slightly changed dimensions. There were absolutely no changes in operations. A large part of the trouble is said to have been psychological—a reflection in the average workman's mind of the apparent indecision on the part of the Government in making the change. It is easily apparent that if a very minor change involves a delay of nine days, a radical change may mean a paralysis of production which would require months to cure.

The provision branch must also be responsible for the supply of all drawings and the necessary jigs.

A further, and vital, point which is invariably ignored in munition provision is that the designer must have direct access to and communication with the user service whilst material for that service is being designed.

The Production Branch.

The representatives of this branch are distributed in the various munition areas in war time as suggested in Table A. The procedure will be that the production demanded by the provision branch, which has been co-ordinated by the Defence Minister, will be notified to the head of the production branch, together with the necessary drawings, specifications, jigs, and pivotal men, if required. The head of the production branch will decide the distribution of the work amongst his areas. The area production representatives will thereafter handle their allotments, distributing the work amongst the factories in their areas as those factories can best handle the work. They will inspect and pass the work, and will subsequently arrange for its transport to the holder service. Area representatives will deal direct with their opposite provision numbers on all technical matters, and will only refer through the head of the production branch on matters affecting other controls such as raw materials, transportation and labour.

It is clear that decentralization of production on these lines, with the consequent advantage of the representative on the spot with the requisite detailed local knowledge, empowered to select contractors, negotiate contracts, supervise production, assist manufacturers with supplies of raw material, transport, labour and capital, is very great.

PEACE TIME PREPARATION.

It remains to indicate the degree of preparedness to be attained in peace. Whilst the provision branch will require comparatively little expansion in an emergency, the production branch, which must be established in skeleton form in peace time, must be greatly expanded in war.

In peace the latter will have a two-fold duty—to collect the information necessary to permit of contracts being placed, immediately on the declaration of war, on factories of known capacity, and, by the collection of this economic intelligence, to train a cadre to operate the production branch in war.

The ideal to be aimed at is :—

1. That the provision branch shall have reduced the design of all material to a form capable of the easiest commercial production on a large scale.
2. That the necessary drawings, specifications, jigs are ready in quantities sufficient to supply the selected manufacturers.
3. That the requirements of the Services (Navy, Army, Air Force) are known as well as the required rate of supply.
4. That the production branch shall have reconnoitred all manufacturing areas, and calculated the capabilities of all factories in those areas.
5. That the requirements of the Services are allocated to areas and firms.
6. That those firms are in possession of drawings, specifications and jigs for the work allotted to them, and that they have been encouraged to make such preparation for a turn over to war production as is possible in peace time.
7. That the contract documents are signed and become operative with the declaration of war on a grand scale.

If the ideal seems too remote, it is interesting to note some remarks on the U.S. Army Ordnance Department plans :—¹

“The requirements for approximately 300 of the major items of ordnance equipment have been computed and tabulated. These requirements would constitute in money value over ninety

¹ Brig.-General W. S. Peirce, speaking to the Army War College, 22nd January, 1923.

per cent. of the ordnance program. Something like 900 minor items are in course of computation, so that eventually the necessary ordnance requirements will number approximately 1,200 items. No attempt has yet been made to reduce the items to terms of raw materials, which will finally have to be done.

"While our requirements have been computed on the basis of a major effort involving six armies, *they are in such shape that the quantities needed for any lesser effort can quickly be determined.*

"The Procurement Day Order list covering the 300 first items has been prepared, and is in the hands of the districts that have begun to function. A number of recommendations for allocations have been received, and are in course of consideration and clearance by the Office of the Assistant Secretary of War. This clearance concerns only the assignment of the plants in question to ordnance work. District chiefs have been appointed in all but two districts, and executive officers have been assigned to nine districts. Assignment of reserve personnel to district positions is progressing as rapidly as possible, consistent with care.

"In connection with the selection of existing plants for ordnance work, the question naturally arises as to how the necessities of other branches of the War Department, the Navy Department, rail and ship transportation, and the civil population generally are to be co-ordinated. It seems evident that a super-departmental agency must be set up with power to handle these and similar questions from the point of view of the Government as a whole. In the present absence of such a body, however, a means of preventing any conflict between the needs of the War and Navy Departments has been provided by the creation of the joint Army and Navy Munitions Board, by which the allocation of all plants desired by two or more branches of those departments are decided."

As a result of their plans, the U.S. Army Ordnance Department estimate that new production will satisfy current requirements "in twelve months as against a period of fifteen months without such plans, whilst the necessary reserve in the first case is much less than that for the second case."

The saving in expenditure on reserve munitions, as a result, is £200,000,000, assuming six armies are maintained in the field.

THE CONSERVATISM OF WAR

By MAJOR O. W. WHITE, D.S.O.

ON every hand we hear that we are at the "Parting of the Ways," and that the aeroplane, moving in its third dimension, will absolutely revolutionise the whole art of war. Whether this is so or not only the future can definitely show, but it is very comforting in our moments of bewilderment at such an immense transition to consider certain factors in war which cannot change until machines can be given the power of thought and imbued with human instincts.

The Man, officer or soldier, is one unchanging factor, and the art of war, as old as man himself, is at its most conservative in those of its laws which are most intimately connected with the selection and training of the man for war. This statement looks somewhat sweeping, but nevertheless it is very true and quite worthy of study.

From the earliest ages there have been writers on the subject. Let us take two, widely separated by time and ideals from each other, and consider their rulings in the light of modern opinion.

Vegetius lived and wrote between A.D. 350 and 400, he dedicated his works to his emperor, Valentinian II, at a time when the power of Rome was on the wane. He studied his subject thoroughly in order to convince his emperor of the seriousness of the situation.

In A.D. 1622, one, Francis Markham, wrote his "Decades of Warre," dedicating this book to the then Prince of Wales. He was fearful that the peaceful ideas of James I might have made the Prince unmindful of wars. He preached that to ensure peace it is necessary to be prepared for war,¹ and enumerated in detail the several ranks, with their duties, that are required in an army.

If two such widely different works agree as to certain principles, and further these principles are not at variance with modern ideas, then surely we have found something which may be regarded as unchangeable.

First as to the Man. What are the qualifications desirable in the civilian who is to be converted into a fighting man? Even to handle a machine a man must have some physical qualifications. This is how the

¹ "*Si vis pacem para bellum*" is the motto of the Royal Naval Gunnery School, Whale Island, H.M.S. "Excellent."—ED.

two authors before mentioned described the essential points of the recruit. Vegetius lays down that he should—

“Have a lively eye, should carry his head erect, his chest should be broad, his shoulders muscular and brawny, his fingers long, his arms strong. His waist small, his shape easy, and his legs rather nervous than fleshy.”

Markham is much shorter; he requires his young soldier to be “strong, active, comely, perfect.”

Either of these descriptions, allowing for the old-fashioned language, would afford a very good guide to a recruiter nowadays. They certainly paint a word picture more easily remembered than any table of heights and weights.

The world has changed too much for the old rules, as regards the pre-enlistment trades of the recruit, to apply too literally. Some do, however, and Vegetius' objection to a recruit who had worked at a trade appertaining “to the adornment of women” certainly does. Who would accept a linen-draper's assistant if he could get a gamekeeper? Markham hardly touches on this, but his stress on the soldier's honour implies his soldiers should come from the better educated classes.

Having got the recruit, or similarly the young officer, what has he to be taught, and what are his duties in each rank? Starting with recruit training. Here to get at really modern ideas it is necessary to consult the more ancient authorities. By the seventeenth century the necessity for drill, and perhaps other causes, had pushed pure physical training out of sight. Far otherwise in classic days, then the greatest attention was paid to making the young soldier fit in every way. Running, jumping and swimming were automatic essentials of preliminary training. The military step was early taught, as was also the carrying of the 60-lb. kit. It would seem here, at least, we are a little behind the Roman standard; a recruit's test of a 24 to 25 miles march in full marching order is unusual nowadays, no matter whether the 4 to 5 hours allowed for it were summer hours or not. Weapon training on assault courses is very old; the legionary recruit, however, had to do his assault practice on his marked “post” with wooden weapons twice the weight of those he ordinarily carried; conducive to strength if not rapidity.

Once past recruits' training the conservatism of war is almost as strong. It is impossible in a short paper to touch on more than the most salient points. Take a few ranks haphazard. To start at the top, there is the “Unlimited Commander,” as Markham calls the Commander-in-Chief of modern days. This is delicate ground, perhaps; certainly Markham's epistle on the subject is his shortest, though not as short as the space allotted in F.S.R. to the characteristics of a commander. It is, of course, no longer necessary for the C.-in-C. to have the virtues of a “Solomon, a David and an Ezekias,” but the “brief summary” is certainly more human than modern phraseology permits.

The "Unlimited Commander" must be "a godly man, a good man, great, merciful, wise, happy and most honoured, most worthy." Further, in success, he is not to "imagine his body yeilded a greater shadow than before." In "declining" or desperate conditions his "constancy must be invincible, as he must govern the courage of the greatest and the wills of the meanest." If involved in failure "his resolution must maintaine so strong a guard about him that she (Fortune) may confess his spirit greater than her violence."

What subaltern would skip reading those early paragraphs in F.S.R. if the qualifications of his generals were enumerated thus?

After the C-in-C., consider regimental officers and men. The Lieut.-Colonel must obviously be given a place. The subaltern, as he forms the most numerous class of officer, deserves one also. That should be enough to prove the conservatism of war as regards officers.

Of course, in the seventeenth century the Colonel commanded the regiment, but many of the Lieut.-Colonel's duties are unaltered, particularly the more human ones. His primary duty was, and is, to "looke to the healthfulle estate" of his regiment. After that he has to see "all obey" and to examine all "controversies." Some cases at orderly room are still controversial, even in the twentieth century!

Two other duties Markham saw fit to include are still vastly important. The Lieut.-Colonel had to be the faithful "advocate" of all cases between his officers and men with those above them. In addition he had to be "conversant and familiar" with all his officers and sergeants and the "greatest part" of his old soldiers, being able to "call them by their names and surnames." The human requirements of a good commanding officer have not altered with the introduction of aeroplanes and tanks.

The subaltern (the lieutenant in the "Decades") has hardly changed in the course of years. He has still to learn all the duties of the lower ranks, though nowadays the learning is done gradually in his O.T.C. and at Sandhurst, or "The Shop." He still has to see that the regimental duties "be perfectly performed," when he is orderly officer. In his platoon his duty is to "traine and drill his men in the office of a good souldier," including the "carriage and use of their arms and their march-motions" with the signals and orders "necessary in battle."

He must have the "virtue and skill of his Captain since in his absence (on leave?) he must take command."

Lastly, and here is a real example of conservatism, he must be able to "return the souldier to the station or order in which he stood before by the words 'as you were!'"

Passing to the "other ranks." The Company Quartermaster Sergeant was not always a warrant officer, he was not even a non-commissioned officer, he was "Clerke of the band," a common "souldier"

with a handle to his name. His duties have not changed much, as he still is second to none in "maintaining the well-being of his Company." He must be a man "worthily worthy of his position," only comparable "to an honest steward of a noble and well-governed family." That he should be rather a "penman than a swordman" still holds good, as also the requirement that he should have a knowledge of "Arithmeticke." No alteration, either in the desirability that he should be "proud of his Company" as well as "temperate and modest," for no company can thrive if he is of "evil or unconscionable habit."

In short, eliminating only a knowledge of the "Lattin" tongue, the qualities required of a Q.M.S., before he can be called a "Treasure," seem to have changed least of all in the military hierarchy.

It is impossible to omit the "backbone of the army," so the Sergeant must not be overlooked. A sergeant's position, no matter what his exact title has been, has always required a certain type of man. A large proportion of them, even nowadays, are middle-aged men of wide experience; there are young and very efficient ones as well, but the rank and position of Sergeant is best suited to the older man.

Markham's Sergeant was "one of the most needeful" in the regiment. Experienced and of an age to readily control the men, he had to be "valiant, expert, vigilant and diligent." In addition he had to be "an encourager of all vertue and a punnisher of all sin," "*hic et ubique*," whatever that implies, and "extravagant in overseeing everything under him"; his particular duty, the training of the "Shot." Nowadays, in addition to teaching the "Shot," i.e., musketeers, he has Lewis gunners, bombers, etc., as well: the passage of time has not reduced his duties, though his moral qualities remain the same. One last example of the fighting man: the Lance-Corporal, known in earlier times as the Lanspedado. From the space devoted to him by the old writers it is obvious that he always had a hard time. The most junior rank or appointment, hardly more than a common soldier with a courtesy title, he had many definite, and innumerable occasional, duties to perform. Throughout the day there was always something he could find or be required to do. Little wonder, therefore, he was required to have a "watchful spirit, capable of ruling others, and ambitious, by no means a ruffian, drunkard, or profane person." In charge of his half, or third, of the Corporal's command, he had to "instruct his men in all the rudiments which belong to their places as well as in the manage and care of their arms." As regards the care of their arms it was pointed out it was advisable for him to see his men knew how to clean then, as otherwise he would have to do it himself!

Enough of the Man. What of the laws he had to obey to attain success? The following are culled from Vegetius, who acknowledges they were ancient even in his time. "Valor is superior to numbers," and "few men are born brave, many become so thro' care and force of

discipline," are platitudes, but well worthy of recollection in days of economy and mechanical warfare.

Surprise, naturally, has always been considered vital, and the old maxims regarding it are just as plain and just as liable to be read in various ways as those in any modern manual :—

" Novelty and surprise throw an enemy into confusion."

" Those designs are best which the enemy are entirely ignorant of till the moment of execution."

" Communicate the designs you intend to put into execution to few," and " trust no one but yourself."

Then to assist the Commander to make up his mind, there is this golden rule : " It is therefore a maxim never to do, or omit doing, anything in consequence of his [i.e., the enemy's] conduct, but consult invariably your own interest only." A perfect rule, but how hard to apply except, perhaps, when writing a paper Appreciation for an Examining Board. That it was not quite as easy as it looked is shown by another maxim a little further on :—

" On finding the enemy has notice of your designs you must immediately change your whole plan of operations."

If rules such as these are still applicable in strategy and grand tactics, there are others in the nature of orders, or instructions, which are just as unchanged. It is bad policy to labour any point so only one example is given.

The Sentinel or Sentry in the seventeenth century was always detailed from the musketeers as having the most suitable weapon for the duty. His orders were simple and to the point. In those days troops in the field were continually exposed to treachery or surprise. He mounted with loaded musket and lit match, while his post, though on a definite approach to the camp or garrison he was guarding, was not to be so obvious as to help the enemy to locate him.

On his post he had " with cunning eie to looke about, and if anyone came within his view or knowledge first to call in a loud voice : ' Qui va la,' or ' Who goes there ? ' " If the answer to this were satisfactory, he then " presently commanded him to stand without approaching a foot further " and called his Corporal to examine the " creature " and to receive the word. This the Corporal proceeded to do with his sword point against the stranger's breast, and the word given in a whisper, lest spies should overhear. Everyone approaching the post had to be so treated except the General and certain duties like " Rounders," who were entitled to receive and not to give the " Word." In places where the enemy " be near " the sentinels were to " stand double and be assisting each to other."

In short, without wasting more time, it can be accepted that modern ideas have not produced any new way of carrying out this important duty.

After the individual comes the group. In the case of the British Army there is an excellent example, if not exactly conservatism, at least of parallelism. Rome possessed an enormous Empire; to guard this she invented or evolved the Legion. This unit was a force of all arms, and capable of taking the field alone without the attachment of any other arms or services. It was small enough to be really mobile, but at the same time large enough to be economical of administrative services, while its fighting strength was sufficient to allow it to operate unsupported.

The Legion varied from time to time; taking a fair average it may be said to have consisted of:—

4,000 to 6,000 infantry (Vegetius advocates the latter);

300 to 700 cavalry (the above authority favouring the larger figure);

Artillery, i.e., heavy catapults;

Machine guns, i.e., light dart-throwing machines capable of rapidly casting their javelins over their infantry's heads, on the scale of one per hundred men;

Engineers, with a light bridging train;

Medical, Supply and Ordnance units.

The whole of the above permanently belonged to the Legion. Administration was not forgotten either, routine matters were duly allowed for, and even Employ, that bugbear of modern soldiering, was the subject of stringent regulation.

Now, considering these details, it will be seen how like the modern Division is to the Legion. Its duties are very similar, and allowing for minor differences, the fighting strength is very much the same. The permanent Divisional organisation is of comparatively recent origin in the British Army; is it not rather extraordinary that after all these years the old Roman organisation has again proved its worth? There is no doubt of its excellence as a fighting formation or of its economy as an administrative one. If, after two thousand years, war is still so conservative, surely it will take more than the advent of the aeroplane to revolutionize it? Every other arm or weapon has appeared before in some guise or other. Perhaps even the tank some day will be regarded as contemptuously by infantry as elephants and chariots were by the legionaries. Even now we follow their rules for the use of chariot-proof localities to strengthen a position, we have only to produce some modern equivalent of the calthorp to lame the enemy tanks to make us safe in front as well.

Without belittling the aeroplane or tank, therefore, there seems some little comfort in the Conservatism of War for those who fight on land. Unless wholesale destruction, falling from the skies, can force a virile nation to surrender, the land soldier will always have his task to do, and in doing it he must obey the laws of Mars.

"THERE IS NOTHING NEW UNDER THE SUN"

PROTOTYPES OF MODERN WEAPONS

By COLONEL C. FIELD, Royal Marines.

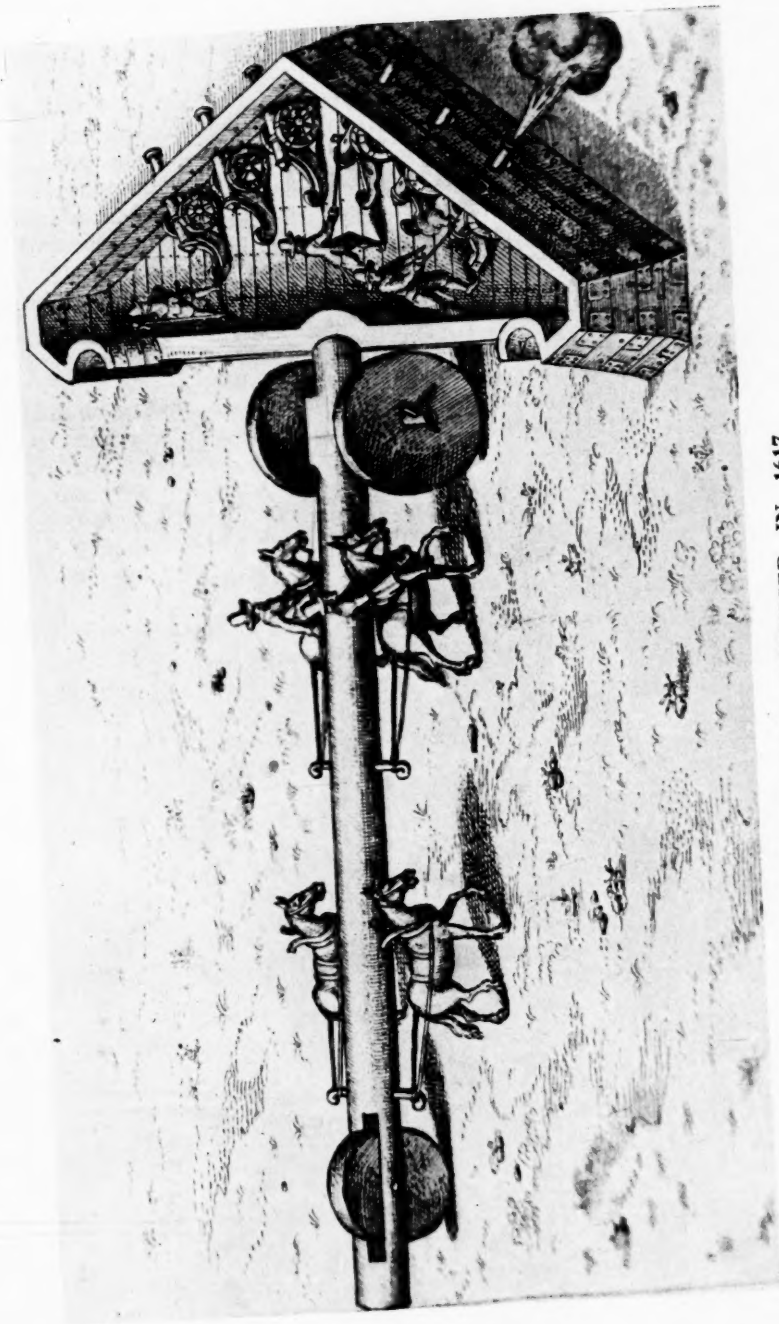
IT may be a trite saying that "there is nothing new under the sun," but it is remarkable how it applies to many, if not most, so-called "new weapons of war." In fact, we find that the greater number of seemingly new and sometimes horrible forms of destruction adopted by the combatants in the late War had been suggested, if not actually tried, hundreds of years before.

Take tanks, for instance. Over 400 years ago such things were proposed by the celebrated Leonardo da Vinci, who, by the way, seems to have thought of almost every modern mechanical appliance. "Also," he writes, "I will make covered waggons, secure and indestructible, which, entering with their artillery among the enemy, will break up the largest body of armed men, and behind these can follow infantry unharmed and without any opposition." Prescott mentions that something of the sort was used in the conquest of Mexico, and Montaigne describes some kind of "Coaches" full of musketeers which were used by the Hungarians in great numbers—3,000 in the front line in one battle.

One of the most quaint, and it must be said impossible, suggestions for a "tank" or moving fort, is that here reproduced from an old work written in Latin and published in 1617. The writer gives no description of its details. The engraving more or less explains itself, and nothing he could have written could explain how three men were going to serve six cannon with any effect, or how the four wretched horses were going to propel the unwieldy mass over what is evidently intended to represent rough and broken ground. The writer advocates a free use of the spur.

Again, in a work published in Paris in 1588, we find a picture of a closed and armoured amphibious "tank" with wheels for movement on land and paddles turned by a crank for propelling the machine when afloat. Many other extraordinary ideas on these lines could be quoted.

Then again, aeroplanes. Such things were imagined, if not actually constructed, ages ago. It has even been stated that men have flown with them, though such statements are hard to believe. Still it is just possible that some form of "glider," such as the Germans have recently



A "TANK" PROPOSED IN 1617

From a print of that date.

experimented with, may have been used for short flights in remote ages. In the great Hindu epic, "Ramayana," there are references to flying men. In this poem, written about 500 B.C., we read that Rawun, King of Ceylon, used to fly over his enemies' forces, and not infrequently inflicted severe losses upon them, apparently by dropping "explosive torches," which are also alluded to. In the end this early airman was defeated by Ramchunder, a Hindu chief, who captured his "flying carriage," and flew home in it to his city of Ajudhia in Northern Hindustan. It may be remarked that in Sanskrit classics many aeronautical terms are said to occur.

Both Shakespeare and Milton drew mental pictures of aerial warfare. In "Julius Cæsar," Act II, Scene 2, we read :—

"Fierce, fiery warriors fought upon the clouds,
In ranks and squadrons and right form of war,
Which drizzled blood upon the Capitol;
The noise of battle hurtled in the air."

Milton wrote of war in Heaven :—

"The madding wheels
Of brazen chariots raged; dire was the noise
Of conflict; overhead the dismal hiss
Of fiery darts in floating volleys flew,
And flying, vaulted either host with fire."

Of course da Vinci had a lot to say about aeroplanes. He actually seems to have known about "air-holes," for he cautions would-be aeronauts to wear lifebelts and make their flying trials over water, on account of the danger of these patches of vacuum. "The human bird," he wrote, "shall take his first flight, filling the world with amazement, all writings with his fame, and bringing eternal glory to the nest from which he sprang." Leonardo's aeroplane was like an enormous bat. It had four wings with an articulated wooden frame to each, like the five fingers of the hand. These were supplied with laces of raw silk and leather straps in lieu of tendons and muscles, and were covered with taffetas. The wings were actuated by a crank and piston manipulated by the adventurous airman who sat astride the middle of the machine working an elaborate machinery of cords, blocks and levers. The inventor did not attempt to navigate the contraption himself. He was content to let his apprentice have the honour of doing so. The youth was unable to make a successful flight, but succeeded in breaking a leg.

In an old English chronicle we have an account of one, Oliver, a monk of Malmesbury, who in 1066, sought to emulate the classical flight of Daedalus. Having affixed some kind of wings to his hands and feet, "he stood on a high tower and took the wind," says the old writer, "and flew the space of a furlong or more. But he was afear'd of the great strength of the wind and of the whirlwind . . . and fell down ;

so that he was lame in his thighs time of his life." There are touches in this short account, which, in the light of the gliding experiments of to-day, give it a certain verisimilitude. Roger Bacon, in the eleventh century gives it as his opinion that flying machines could be made, and an old writer relates that on the entry of the Emperor Maximilian into Nuremberg, "a cunning artizan made a wooden eagle which flew a quarter of a mile out of the town to meet him . . . and returned back of its own accord, and so accompanied him to his lodging." The same genius is also said to have invented an iron fly which flew out of his hand and returned to it.

Evelyn, in his well-known Diary, says that he saw in 1645 at the Opera in Venice, "machines for flying in the air, and other wonderful notions." Could these have been some relics of da Vinci?

Although aeroplanes had not to be dreaded in 1532, there seem to have been guns which might have done service as anti-aircraft pieces. For in the contemporary account of the meeting of Henry VIII and Francis I in that year we find that "At the meeting of these two noble kings, there were (English) sakers and sakerets cast off; and at divers flights (of shot) 2 kites were beaten down which were soaring in the air, with such-like pastime, which greatly pleased all the nobles of both parties."

The advent of the horrible and "unsportsman-like" poison gas sent a thrill of horror through all civilised communities. Yet, sad to say, the idea was not entirely a new one. Da Vinci—we cannot get away from our friend, Leonardo—suggested something very much of the same sort for use in naval warfare. "Throw among the enemy ships," he says, "with small catapults, chalk, pulverised arsenic and verdigris. All who inhale this powder will be asphyxiated by breathing it, but be careful that the wind be such as not to blow back the fumes, or else cover your nose and mouth with a moist cloth so that the powder fumes cannot penetrate." Here again we have the idea of a "Gas-Mask." The poisoning of the defenders of a besieged town by hurling in the decaying bodies of dead horses by means of trebuchets, was a well known and unpleasant device of mediæval warfare. It is said that the invention of Lord Cochrane, which he communicated to the British Government, and which it was decided to keep a dead secret in order that such a diabolical scheme should not be added to the horrors of war, was the "gassing" of the defenders of a fortress by the fumes of burning sulphur. "Smoking out" was an old means of getting at an inaccessible enemy, and was resorted to with deadly effect in the attack on the Matebele in their cave fastnesses in South Africa. When a Mexican desperado in 1913 or 1914 had sought refuge from justice in a mine at Bingham, Utah, the ventilating system was used to circulate through the mine the fumes of burning oil, sulphur, tar and wet gunpowder.

One of the most striking protective devices in the late War was the extensive development of "camouflage," both on shore and afloat. As

long ago as the war of 1870, the French had used painted canvas representing the parapet of a trench to mask the movement of some of their troops during the siege of Metz, and screens of boughs and brushwood were a good deal used by the Japanese in their campaign against the Russians in Manchuria. Camouflage afloat is, however, of very much greater antiquity, for it is related that the ancients painted their sails of different colours, both for decoration and "to deceive the enemy." Often to surprise an enemy, and to conceal their vessels as far as possible from sight, they would paint them sea-blue, rigging and all.

Even the "Q" boats, those disguised vessels which scored so heavily off the German submarines, have their prototype as far back as the days of Charles II. In a newsletter of 9th May, 1676, we read: "The King went . . . on Sunday to see a ship that has been lately built to cheat the Turks." By "Turks" are meant the Algerine pirates that at that time infested the English and Irish Channels, creating a much greater "scare" than did the "U" Boats. "She is built in the manner of a fly-boat, and to outward appearance looks like a ship of 150 tons, but is in reality 600 tons, carries 40 guns and 200 men, and is a most excellent sailer." History does not relate what success she had against the "Turks."

The spirited action of the little steam collier "Thordis," in ramming an enemy submarine, has its parallel in 1693 when a collier bound from Newcastle to London was attacked by a French privateer of sixteen guns and 120 men. The skipper in this case also "ran athwart and sunk him, and afterwards fished up 9 Frenchmen; the rest were drowned," says a contemporary account.

One of the apparently unforeseen dangers of naval warfare was the deadly effects of high-angle fire, one result of the enormous ranges at which heavy guns can now be fired. Many losses at Jutland were due to this. The deadliness of this form of attack seems, however, to have been recognised as far back as 1693, when the King saw "the experiment of a new invented mortar at Woolwich throwing a shell that will immediately blow up a ship if it falls in it."

The "Flammenwerfer" introduced by the Germans were, of course, a modern and improved edition of the brass elephants of Alexander the Great, which spouted flames of naphtha, and the siphons used by the ancients for squirting Greek Fire.

Finally, nearly all the devices adopted by the British Navy in its attack on Zeebrugge, had been foreshadowed by those which its predecessors had used at La Rochelle in the early part of the seventeenth century. They put up a smoke screen by floating in barges filled with burning dung, they had ships filled with stones to block the channel, they had "boates to goe under water" and floating mines, they tried to destroy the dyke and stockading which had been built to cut off the

city from help from seaward, by exploding against it ships lined with masonry and filled with powder, just as the connection between the Zeebrugge Mole and the mainland was blown up by a submarine crammed with explosive.

The apparatus used at La Rochelle, was of a primitive description and the explosives weak, but the failure of the methods of attack upon that occasion was probably mostly due to the personnel which employed them. The British Navy was then at about its worst phase as regards officers, men and material, and no more to be compared in efficiency with that of the Great War in either of these factors than its feeble gunpowder with our modern high explosives. The success of the Zeebrugge operations may, therefore, be regarded as yet another proof that it is always the "man" that counts in the long run.

FRENCH NORTH AFRICA: WITH SPECIAL REFERENCE TO MOROCCO

By COLONEL A. FAGALDE, C.B., C.M.G., M.C., French Assistant Military
Attaché.

On Wednesday, 10th February, 1926, at 3 p.m.

THE RIGHT HON. SIR W. LAMING WORTHINGTON-EVANS, Bart., G.B.E.,
M.P., Secretary of State for War, in the Chair.

THE CHAIRMAN: Ladies and Gentlemen,—We are fortunate to-day in having Colonel Fagalde, the French Assistant Military Attaché, to give us a lecture. I will waste no time in introducing him to you, since you all know him as well as I do, but will at once call on him to address you.

LECTURE.

I have to speak to you to-day on the subject of French North Africa, but before dealing with North Africa I would like to say a few words about France. France, as you all know, is an agricultural country, practically self-contained so far as food is concerned, but far from being so in regard to raw materials, and still less so from the point of view of man-power. The population of France is not increasing. It is not diminishing, either; and here I would like to correct a very widespread and false impression which is prevalent in other countries. Our birth-rate is not going down; on the whole it seems to show a tendency to rise, although very slowly at the present time. In 1924, for example, the French birth-rate was 19.2 per thousand, while the English birth-rate, I think I am right in saying, was 18.3 per thousand. I do not mean to imply that the French birth-rate is very satisfactory, but then no more is the English birth-rate either. In spite of that, the English population increases more quickly than the French population. The difference arises from the fact that the English death-rate is much better, if I may use the word, than the French. While the French death-rate was seventeen and a fraction per thousand, the English death-rate was only a little over twelve. That explains the difference in the increase of population as between France and Great Britain.

The fact remains, however, that the increase of population in France is small when compared to that of certain other European countries. I do not know whether many people realize the fact that since the Armistice Germany has increased her population by nearly 4,000,000. Italy is doing the same, although at a smaller rate. When I say that France is far from being "self-contained" in the matter of population, I am speaking, therefore, relatively. What France needs, both in peace and in war, is more men and more raw materials. That leads me to the subject of my lecture which is North Africa.

What is North Africa? A French writer, Theophile Gautier, has written that Africa begins at the Pyrenees—a bold declaration for which the Spaniards have never forgiven him. I do not hold that view myself, but would rather agree with General Mangin when he says that Europe ends on the fringes of the Sahara, meaning that the Mediterranean, instead of dividing Europe from North Africa, unites them.

I will not hide from you the fact that I approach my subject with a certain amount of trepidation, because whenever one speaks before an English audience on any country, one soon discovers that they know it better than one does oneself. Allow me to quote an instance. I come from the South of France, from the Pyrenees. In my own country, some friends and myself occasionally asked a guide or a peasant about some mountain or other, enquiring whether it had been climbed or not, and we were always met with the reply: "Yes, an Englishman went up last year," or "Three Englishmen went up two years ago." What could we do but follow you? That is how you have led us, in my part of France, to discover our own country.

I will not venture, therefore, to describe North Africa to you from the physical and geographical standpoint; I will merely give you a general idea of the administrative divisions of the country, and then proceed at once to the real subject of my lecture—an examination of the question of how North Africa can help France in the domain of manpower and raw materials.

North Africa consists of Tunisia, Algeria and Morocco. Algeria, including what we call the *Territoires du Sud*, is a *direct possession*, in other words, a prolongation of France, and so we like to term it. Tunisia and Morocco are *Protectorates*.

Now Algeria is divided into four parts: three Departments—Constantine, Algiers and Oran—and the Southern Territories, which extend into the middle of the Sahara. The three Departments of Constantine, Algiers and Oran are administered, generally speaking, on the lines of French Departments: the Southern Territories come under a military administration, although at the head of those Territories stands a civilian who resides at Algiers. The two Protectorates are in different stages of advancement and civilisation, and, although they are nominally administered in a like manner, Tunis is, in practice, administered more or less

like one of the Departments of Algeria, while Morocco is treated in much the same way as the Southern Territories. I will not take up more time in describing the administration, but will now go straight to the subject of my lecture.

I have already told you that France needs more men, both in peace and in war. She also needs more raw materials. But let us first examine the question of man-power. French North Africa contains between 12,000,000 and 13,000,000 inhabitants, of whom 1,000,000 are Europeans. The proportion of French people to other Europeans and to natives is roughly as follows:—In Algeria, where we have been since 1830, there are 10 French people to 3 other Europeans (mostly Spaniards), and about 100 natives. In Tunisia, where we have been since 1881, there are 10 French people to about 20 other Europeans (mostly Italians and Maltese) and 380 natives. In Morocco, which was the last country to be occupied—in 1907—you find 10 French people to 20 other Europeans (mostly Spaniards) and 1,580 natives.

Before going to the heart of the question of the help North Africa can afford France in the domain of man-power, I must tell you what elements of such man-power we find in North Africa. Speaking very generally, in the whole of North Africa there are only and mainly two races—the Berbers and the Arabs. Those two races are very different. When people speak of the inhabitants of North Africa they call them Arabs, but nothing could be further from the truth. As a matter of fact, the Berbers are much more numerous than the Arabs, and were in the country long before the Arabs arrived. Although we are not absolutely sure of it, it is probable that they are the original race of the whole of North Africa. The Arabs first arrived in the country as late as the seventh century, A.D., and then more or less disappeared, to come back definitely in the eleventh century. The Arab occupation, therefore, is relatively recent.

To give an idea of the relative proportion of the two races, I will say that over one third of the natives are pure Berbers, under one third are Arabized Berbers, and under one third are pure Arabs.

The two races, as I have said, have very different characteristics. The Berber is an agriculturist and sedentary; the Arab is a shepherd and a nomad. The Berber is a very hard worker; he is very industrious and thrifty, and a very good business man; the Arab is lazy, careless, prodigal, and a very bad business man, as the Jews know full well. The Berber is really at heart an anarchist: I should call the Berber social organization an anarchical republic. The Arab social organization is exactly the reverse; it is an oligarchy, and the Arabs have chiefs who are strictly obeyed. As far as physique is concerned, the Berber has the physique of a mountaineer or a land labourer; he is sturdy and strong, and generally dark, though sometimes fair. The Arab, on the other hand, has the physique of, as we say, "a man of the great tents," i.e., of a horseman; he is tall, slim and distinguished-looking. Turning to

the religious side, the Berber has no religion, or is, at any rate, very indifferent about it. He has adopted successively in the course of his history, the Gospel, the Talmud and the Koran, which means that, starting as a heathen, he has become successively a Christian and a Jew, and is now a Mohammedan. The Arab, on the contrary, is rather a fanatic in religious matters, and is always ready to risk his life for the defence of his religion. You will see from that short summary how widely different are the two races of North Africa.

They have, however, one point in common, and it is a point of great importance so far as man-power is concerned; they are extremely brave and courageous, they love fighting, and join willingly in a "baroud" (fight). During the Great War, North Africa sent over to France 230,000 fighters and 130,000 labourers, out of whom 35,900 were killed. This gives you some idea of her effort during the War, in spite of the fact that the man-power of North Africa was naturally far from being exploited as was that of European countries. It has been calculated that North Africa could, with a better organization, give easily one million fighters and labourers.

Now that I have described the races existing in North Africa, and her effort actually made during the recent emergency, I must tell you a little about how we think of organizing that man-power in the future. First of all, what are we doing now? In Tunisia and Algeria we have conscription, but we have not yet introduced it into Morocco. We did not, as a matter of fact, introduce conscription into Tunisia, because it was in force there long before we arrived in the country. Conscription in Tunisia dates back to 1837, and we did not occupy the country until 1881—nearly fifty years later. In Algeria, however, we introduced conscription in 1912, two years before the War. Although nominally it is universal conscription, in practice we conscript only about 20 per cent.—the exact proportion for 1924 was 18.2 per cent.—of the annual contingent, which is of the order of 30,000 to 40,000. Conscription at the present time in North Africa is only applied to reinforce voluntary enlistment and to complete what voluntary enlistment does not give. If voluntary enlistment were sufficient to keep up the strength of all the North African regiments, we should not conscript a single man; but as, owing to the increase in the native regiments since the War (to compensate, to a certain extent, for the reduction in French regiments), voluntary enlistment alone does not suffice to keep up their strength, we have to conscript about 20 per cent. of the annual contingent. The conscripts serve two years, and they are given the same advantages as regards pay as the voluntarily enlisted men.

The North African native regiments are stationed in principle in North Africa, but a certain number of them are stationed in France and in Syria.

That is the present system. I tell you quite frankly that I do not think it is a good one. My personal opinion is that we have made two

mistakes : the first was to make the service required from the conscripted natives longer than that required from the conscripted French, who serve eighteen months, and the second has been that of stationing our native regiments in France. The first mistake has this result. If you ask a native to serve compulsorily longer than a Frenchman, he will ask for more rights, political and otherwise, than the Frenchman, or at least he will ask for equal rights, which you cannot give him. That, therefore, creates trouble. On the other hand, stationing native regiments in France is, to my mind, a bad system, because there the native soldiers only mix with the lowest class of the population, and go back to their country with extraordinary ideas about French people, which are not calculated to increase our prestige in the eyes of the natives.

I will now hasten to say that we have realized those mistakes, and that the experts on native military matters are contemplating a totally different system. We shall certainly maintain conscription in North Africa ; we have to do that, for reasons of high policy, but we shall endeavour to increase voluntary enlistments with a view to forming native African regiments—as, indeed, we had before the War—of long-service men only (three years at least, with re-enlistment up to twelve years). Our efforts will thus be directed towards recreating those splendid native regiments we had before the War, such as the Algerian Sharpshooters and the Spahis.

The annual conscripted contingent we shall only maintain for a short time—one year, or probably less—and in separate units. The period of two years for which the men are now kept is, in fact, either too short or too long. It is too short if you want to train the natives thoroughly ; to do so requires at least two years, but more probably three. It is too long, however, if you merely want to inculcate the elementary principles of military training. The experts are, therefore, of opinion that it is desirable to reduce the length of time for which the native conscripts have to serve, and to form with them units independent from the long-service units. The result will be that, serving for a much shorter time than the ordinary Frenchman, they will not be able to claim more rights.

All the North African native regiments will be stationed in North Africa, and possibly Syria, if the exercise of the mandate requires it.

The experts also recommend the organization of native reserves in a different way. Instead of applying to North Africa the French system of calling up the reserves, which is what we have tried to do, we shall apply different systems following the regions. It is obvious that you cannot adopt the same system on the coast, where the people are more or less Europeanised and sedentary, and in the Sahara, where the nomadic Tuaregs never stay more than a few weeks in the same place. On the coast you can call up the native reserves as we could do in France, i.e., individually. In other parts, the best system will be to

call them up by tribes or fractions of tribes. Further south it will be the system of mass levy and so forth.

That is all I want to say about the man-power side of the question. I will now come to the question of raw materials. That question at once brings me to the question of colonisation, and I will, therefore, examine briefly how we have colonised North Africa. First of all, what is colonisation? Colonisation, as we understand it now (I say "now" for a reason which will be apparent later) is the gradual and methodical development of an uncivilised country by a civilised country *through* the natives and *for* the natives. *Through* the natives by making them collaborate in the administration of their own country, and *for* the natives by improving their material, intellectual and social condition. In other words, colonisation is the art of touching everything without breaking anything; also, I should add, of improving everything.

If we now look at the history of French colonisation in North Africa, I must tell you at once that at first it did not at all answer to the definition I have just given. We landed in Algeria in 1830; we went into Tunisia in 1881, and into Morocco in 1907. An examination of the system of colonisation in those three countries reveals three different stages in the development of French colonisation.

As I say, we landed in Algiers in 1830. At that time France had no colonies; she had lost them all at the end of the eighteenth century. We had, therefore, no colonial staff and no colonial experience. The experience of the eighteenth century had been lost, and the fact, therefore, that we had no colonial staff of any experience was of great importance, because it led to many mistakes in the colonisation of Algeria. The difficulties were, of course, enormous. There were difficulties at home, because the opposition in Parliament was for evacuation—as it generally is in all countries. The difficulties in Algeria itself were not smaller, and arose from the fact that, following the inveterate French habit of generalisation, we introduced into Algeria the French systems of civil administration, which immediately put the soldiers and civilian officials at loggerheads. Some of the difficulties, I must say, were due to the soldiers themselves. A general who had taken a prominent part in the conquest said in Paris "Nothing flourishes in Algeria except the cemeteries," which, of course, reinforced the opposition.

Difficulties also came from the natives. I will give you two instances. A law was passed obliging the natives to register all births, marriages and deaths of members of their families. In the first place, the natives have no family name; for them the tribe-mark, tattooed on the forehead, the chin or the cheeks, is a sufficient proof of identity. Yet if they did not produce a document when they were asked for it they were fined, and so they always produced a document; but it did not necessarily belong to them, and it had not necessarily any connection with the matter in hand. A *caïd* went one day to the registry office to declare the forth-

coming marriage of his daughter, but there he discovered that he had never declared her birth, which, of course, made him liable to a fine of fifty francs. That called for reflection. In the meantime, one of his wives gave birth to a little girl. That was a divinely-sent chance to correct a long-standing blunder. The *caid* then declared two girl-twins, and the following day came back to the registry office with his paper to declare the marriage of the first girl. The registrar said to him: "You cannot marry a girl who is one day old." "One day old!" replied the man, "she is seventeen; do you want to see her?"

Another law which was passed obliged the natives to observe certain prescriptions in building their houses. A native builder was summoned to the local office of the Board of Health for having sent in an incomplete declaration, and was told to return with a plan next day to show that the sanitary regulations were observed. He came back a few weeks later, and when asked by the clerk about the reason for the delay, replied: "How could I produce the plans of the house before it was built?" These were the difficulties—coming, as you see, from the natives, from the French soldiers and civilians in Algeria, and from the people in Paris—against which Algerian colonisation had to fight.

Roughly speaking, from 1830 to the present day, one can say without exaggeration that the system of colonisation in Algeria has changed on the average every ten years. Three different systems have at different periods been applied, which we call Small Colonisation, Great Colonisation and State Colonisation. Small Colonisation roughly consists in taking the land from the natives by persuasion or otherwise, rarely by purchase, and giving it or selling it in small parcels or holdings to the settlers. With Great Colonisation the land is also taken from the natives, but is sold in large areas to big companies. State Colonisation has the same origin as the other two, i.e., in land taken from the natives, and is a mixture of Great and Small Colonisation, the State remaining the landlord of the settlers. Those three systems were tried successively during the time between our landing in Algeria and a few years before the War, when our policy changed radically, and began to follow quite a different course.

That new course is best shown by our colonisation of Tunisia. When we went into that country in 1881, we possessed some colonial experience, bought dearly, as you have just heard, in Algeria. In Tunisia we were faced in some respects with the same problems as in Algeria. We found there, as they existed in Algeria (although we did not know it to start with in Algeria, being totally unacquainted with the populations and systems of landholding) four sorts of native estates: (i) State property; (ii) collective property, which is the property of the tribe or of a group of families; (iii) individual property, and (iv) religious property, which is the property of the numerous and powerful religious orders. We dealt with these four kinds of estate in different ways. In the first place, individual property, when properly established, was

respected ; religious property could not be touched, either. As regards collective and State property, the position was different. If the collective property of the tribe was not exploited properly, the tribe was ordered to exploit it, and, if it failed to do so, the property would be disposed of for settlers. State property, which was generally fallow, was generally divided and sold or let to settlers for the benefit of the State.

We thus acquired in Tunisia a thorough knowledge of the land question, which is by far the most important from the native point of view, and when we went to Morocco we knew exactly how to deal with it. We, however, in that country, applied a slightly different system. We treated individual, religious and collective property much in the same way as in Tunisia, but State property, known as *Maghzen* property, was in a great many cases divided between local Moroccan families, who were landless, up to twenty or twenty-five acres per family. These families were given agricultural implements, a certain quantity of seeds, a few head of cattle, and, in certain cases, a small sum of money, with the very necessary and imperative reservation that they could not under any pretext sell the land they had thus acquired. A step forward was thus made in colonisation, and it can be said with truth that the man who has made of Morocco what it is to-day, Marshal Lyautey, has exactly fulfilled the definition I gave of colonisation as it should be understood. Marshal Lyautey's formula in Morocco has been from the beginning, "Morocco for the Moroccans through the Moroccans."

This is the real modern formula of colonisation. Whoever disregards it will have to pay the penalty.

I have shown you the past ; what now of the present ? The present in North Africa may be summed up by saying that our efforts now being made there tend principally in two directions ; the first aims at developing the means of communication, and the second in developing irrigation, or what we call the "water policy." As regards the means of communication, North Africa possesses a network of railways extending over 6,318 kilometers. This represents 526 miles per 1,000 inhabitants (Great Britain possesses 769 miles per 1,000 inhabitants). That system will be largely increased, as well as the roads system. As regards the development of irrigation, the "water policy" reigns supreme to-day in the whole of North Africa. In Algeria, for instance, we are now building in the Valley of the Oued Fodda, in the Ouarsenis, a dam which will be 330 feet high, and which will allow of the collection of 390,000,000 cubic yards of water, irrigating a surface of 48,000 acres of land suitable for the growing of cotton. That is what we are doing in the North ; we are, in fact, following the same policy that you are pursuing in the Sudan, and that the Romans pursued before us in North Africa—building dams to collect water and regulate irrigation. In the south, where hydrography does not offer the same opportunities, we are multiplying artesian wells. There was, for instance, an oasis at *Mraier*, (between *Biskra* and *Tuggurt*), which was dying out for lack of water.

Boring operations were undertaken, and one night water spouted up at the rate of 10,000 gallons a minute. It had to be stopped, because that was too much. The water policy in that region will enable us in a few years to take the "White Train" at Biskra and go to Tuggurt through 150 miles of uninterrupted palm groves.

The general tangible results of the present policy in North Africa of developing means of communication and irrigation will be that the production of raw materials will become more and more important every year. I will not go into figures, but during the late War the contribution of North Africa to our requirements was quite appreciable. She sent to France 25,000,000 hectolitres of wine, 1,300,000 tons of cereals, 166,000 tons of vegetables, 11,000 tons of fish, 4,000 tons of eggs, 25,000 tons of olive oil, 5,300,000 sheep, 201,000 oxen, etc. In the future her contribution will become much more important and, in certain contingencies, probably vital. Already, North Africa's production reaches one fifth in cereals and one ninth in wine of the total French production. As regards minerals, North Africa has extracted from her soil in 1923 (latest year for which reliable statistics are available), 2,265,000 tons of iron ore, 60,000 tons of zinc, 30,000 tons of lead, 4,000 tons of copper, 8,000 tons of mercury, 7,000 tons of antimony, 7,000 tons of manganese. We have discovered in the province of Oran a certain amount of oil, though we do not yet know what it will yield. Another great product of North Africa is phosphates, which are extracted in enormous quantities (3,114,000 tons in 1923) especially in the South of Tunisia and in Morocco.

I have now shown you what are the possibilities of North Africa as regards men and raw materials, yet this is not all. North Africa is only a part, although the richest, of what we call *le bloc Africain*, for this is how we name the whole of our African colonial possessions, which include North Africa, Western Africa and Equatorial Africa. North Africa is separated from Western Africa and Equatorial Africa by the Sahara. The Sahara was once an obstacle; it is so no longer. It has been crossed during the last two years by all sorts of vehicles, and especially by the caterpillar. It has been crossed by aircraft, and our present intention is to build a railway across it connecting West and Equatorial Africa with North Africa, in order to unite the three parts of the "African bloc" by rail. To show that the Sahara is no longer an obstacle, I may say that last year two brothers, the sons of General Estienne, who played a great part in the war in connection with tanks and caterpillar traction, crossed the Sahara from the Niger to Colomb-Bechar, the terminus of the railway from Oran, in three days, naturally driving day and night, and that, not on a caterpillar vehicle, but a six-wheel Renault car—a conveyance which could be used on the streets of London. The Sahara is therefore no longer an obstacle, and the African bloc can thus be made into a real single unit.

You will see now the most important part that North Africa will play in that system. North Africa will become, in case of emergency,

the collecting place of all the resources of West and Equatorial Africa. I will not enumerate those resources, but I may say that the prospects are most hopeful. For instance, West and Equatorial Africa are developing cotton growing on a large scale, and are already producing enormous quantities of vegetable oil which might some day be as much used as mineral oil in internal combustion engines. Once the resources from the whole of the African *bloc* are collected in North Africa, it remains to bring them safely over to France, and this is the critical part of the operation. They have to cross the Mediterranean. It may be very simple in peace time. It may be not so simple in war time. You can now realise the large part the Mediterranean holds in our preoccupations. One can almost say that the Mediterranean is our only real naval problem. The main, if not the only, French naval problem consists in protecting the transportation of the resources in man-power and raw materials of the French African *bloc* across the Mediterranean to France. The Mediterranean is a narrow sea. Between Algiers and Marseilles the distance is about the same as between Marseilles and Paris—about 800 kilometres. What, in that narrow sea and for a short passage, is the best way of protecting the safe transportation of all those resources, which may be vital to us in a case of emergency? Is it to build very big warships? We think not. They are too costly and too vulnerable. What, then, is the effective weapon? The cheap and sure weapons are, in our estimation, mainly the submarine and the aeroplane, assisted by a certain number of very fast cruisers. I trust I have now made you realise the importance of the submarine and of the aeroplane in French policy, and that you will no longer ask us to suppress either of them.

I will now say a few words about the situation in Morocco. To understand the operations which took place in that region last year, we must go back to 1924. In 1924, the general military situation in Morocco was as follows. We had a northern front, a central front and a southern front. In the early part of 1924 the northern front was comparatively quiet, the central front, although small, was very active, and the southern front was also comparatively quiet. Taking the northern front, the line of our posts ran along the southern bank of the River Ouergha, and then westwards through Ouezzan to the River Lukkos, which marks the Spanish frontier. East of the Ouergha, between that river and the River Moulouya, the front was very ill-defined.

In 1924, Marshal Lyautey, with the idea of getting nearer the northern political frontier of French Morocco, which had been established by the Franco-Spanish agreement of 1912, decided to push forward from the southern bank of the Ouergha to the northern bank, the operation having for its objective the inclusion of the valley of the Ouergha in our territory. It was carried out without difficulty in 1924, but it created a grievance on Abdul Krim's side. He pretended that the Ouergha Valley had always been in his territory, and that its resources were his. Marshal Lyautey answered that those resources were still at his disposal,

but against cash. Abdul Krim was not used to paying cash when he came to the district to take away wheat, barley, money and men.

That was the cause of Abdul Krim's offensive in 1925, an operation which was favoured by the fact that in 1924 the Spanish carried out a withdrawal which left his movements entirely free. The operations in 1925 can be summed up in the following way. Between April, when Abdul Krim started his offensive, and the end of July, when sufficient reinforcements from France and Algeria had arrived on the Ouergha, that offensive developed very favourably for the Riff contingents. As a matter of fact there was not a single day when we did not lose either a post or some ground. At the end of July, however, the situation changed entirely, and owing to the reinforcements sent from France and Algeria and the masterly conduct of operations by Marshal Pétain in person, we were able to push back the Rifis to the north of the Ouergha, to the east and north of Ouezzan, and to the north of Tazza. That French counter-offensive developed between the beginning of August and October, when the rain set in and stopped the operations.

The northern Moroccan front is now divided into two sectors—the Tazza or eastern sector, and the Fez or western sector. The Fez sector has three divisions, and the Tazza sector two. There is, in addition, a general reserve of one division, with a few odd battalions, forming altogether about another division. There are thus practically two divisions in general reserve, plus a cavalry division, heavy artillery units, air units and tanks. Such is the situation from which we shall start for the operations which seem to be contemplated for 1926.

As regards the future I cannot say much. One of the main defects of the past has, however, been remedied, and Franco-Spanish collaboration is now ensured. The operations will therefore assume quite a different aspect in the future, but, my personal opinion is that as long as the Riff is not permanently occupied—and it can only be occupied by the Spaniards, because it is in their zone—operations in the Riff will not come to an end.

The lecturer then showed a number of lantern slides illustrating the country where the operations were taking place. In doing so he mentioned that sixty per cent. of the French Foreign Legion was composed of Germans, whose services were excellent, and supplied a good number of very good N.C.Os. Referring to the last slide, which showed Major-General Sir Webb Gillman with Marshal Pétain, General Naulin, General Boichu (now C.-in-C. in Morocco), and their staffs, he said:—

“ I particularly wished to show you this picture, because it illustrates that friendship and comradeship between our two peoples, cemented on the battlefields of France, which will always unite them in the future, a friendship in the promotion of which it has been my great privilege to play a very small and modest part, and to the maintenance of which

I have always given, and will gladly give as long as I live, the best of my efforts, the best of my thoughts and the best of my heart." (Applause.)

There was no discussion.

THE SECRETARY read the following letter from Major-General Sir Webb Gillman :—

"It would have given me the greatest pleasure to have attended Colonel Fagalde's lecture, but I am off at an hour's notice for Cairo on duty.

"I was accredited to the French Army in Morocco for some weeks in October last, and I returned full of thanks for their courtesy, hospitality and frankness. Marshal Pétain, whose guest I was most of the time, was more than kind. The French Government gave me diplomatic facilities which made my travels a pleasure. It also gave me railway concessions of a most generous nature. It is consequently a matter of great regret to me that I cannot be present at the lecture, and I shall be more than glad if you will say some little word to express my appreciation of the way I was treated.

"Whoever may preside can obtain from the War Office a copy of my report on Morocco to read. It will not take long, and it will help to explain what I refer to. My general impression of the work done by the French in Morocco is that they have done remarkably well with the material at their disposal—local levies backed up by colonial troops; very few white troops were engaged—in a country as hard, if not harder, than parts of Waziristan."

THE CHAIRMAN.—I should like, on your behalf, ladies and gentlemen, to tender our most grateful thanks to Colonel Fagalde for the excellent lecture he has given us. I have no doubt that every one of us has been intensely interested in the very skilful and able development of his theme, leading up to the pictures he has shown us, and the touching appeal he made to us at the finish. All of us must feel we take away something more than we brought to this gathering, and we are all grateful to the lecturer for so kindly adding to our knowledge. (Applause.)

At the instance of General Sir Edmund Barrow a hearty vote of thanks was accorded to the Chairman for presiding, and the proceedings then terminated.

TANKS IN MOROCCO IN 1925¹

THE 337th Tank Company was sent to Morocco in July, 1920, and went home in March, 1922. No tank then took part in the subsequent military operations in the Protectorate until May, 1925, when a special tank battalion was despatched to Morocco. This was to have been composed of:—

1 Battalion H.Q.;

3 Companies;

1 Park Detachment;

but the companies were reduced to two, until reinforced by a third during the second half of August.

In July, a second battalion of tanks was despatched for service in Morocco. It comprised battalion H.Q. and two companies, reinforced by a third company, on flexible Kegress tracks.

These units were organized on a special establishment. The Morocco tank company had the following effectives:—

4 officers;

106 N.C.Os., corporals and chasseurs;

13 tanks;

10 tank-carrying lorries;

1 dozen various vehicles.

It was organized into:—

1 H.Q. group, provided with signal material;

3 fighting sections of 3 tanks each (1 tank carrying a gun,
2 tanks carrying machine guns);

1 Unit, consisting of:—

1 reserve section of 3 tanks;

Means of transport (10 tank-carrying lorries)²;

Supply transport (7 lorries, light lorries and trailers).

Repair unit (1 workshop, 2 lorries and 1 squad of artificers).

The H.Q. Section of the battalion comprised:—

3 officers;

14 other ranks;

4 vehicles.

Finally the Park Detachment comprised:

11 men and 1 stock of spare parts.

¹A précis of an article appearing in the "Revue Militaire Française" for 1st September, 1925. See also "Militär Wochenblatt" for 25th January, 1926.

²One company drawn from the 61st Battalion at home, had tractors with tank-carrying trailers, instead of lorries.

This latter detachment was reinforced so as to be able to undertake heavy repairs for tank material. Thus, on the one hand, the fighting section was reduced to three tanks, while on the other the company was organically allotted means of transport, supplies and repair. The intention was to form light and flexible fighting units, which should still retain sufficient attacking power, and yet prove self-contained during several days of active operations. Further in rear, a repair and supply unit for tank material was created.

Operations of 1st Battalion.—The 1st battalion had disembarked at Casablanca by 4th June, and was sent to Fez by rail.

On the 13th one company left for Ain Aicha, where it arrived without a hitch on the 15th, after a run, on lorries, of fifty miles over "roads" offering steep gradients and numerous turnings. From the 20th to the 23rd it took part in the evacuation of the Taunat post; on the 24th it redescended on Tissa, and on the 25th returned to Fez in a single run of thirty-three miles.

On the 27th June the other company left for Taza, and covered seventy-five miles in three marches. The tanks were often unloaded in order to traverse the wadis, by fording, or by crossing bridges on tracks over a travelling ramp. On 2nd July, the company was sent on a reconnaissance into the valley of the Wadi el-Hadar, but on the night of 3rd-4th the order was issued for its return in two marches. The movement was effected without breakdown of the tank-carrying lorries.

On the 18th and 19th August, the Company acted as flank-guard for the mobile group in difficult country during its march to Msila.

On the 25th a section took part with two Tunisian battalions, in an attack on the Semiet.

During the next seven days fighting in the region north of Taza, the company received several special missions, but was only rarely employed in *direct support of infantry*.

Meanwhile the other (2nd) company was sent to the Wezzan region. It does not appear to have been in action until the arrival of the second tank battalion. On 5th September, it was *en route* for Issoual by night march. Leaving Si Reduane at 19.30 hours, it reached the Col de Bab el Moruj at 04.00 hours, after having run, during the night, twelve miles on tracks, over very broken country. At 07.45 hours it left this point to assist the infantry in occupying the plateau, which operation was effected without difficulty.

From the 7th to 10th September, the sections on the plateau, transformed into mobile blockhouses, were exposed to Rifi artillery fire, from which, however, they suffered no casualties.

On 11th and 12th September, the company took part in the attack on the fort of Bab Hauceine; during the action a tank was sent to the

rear to assist a lieutenant in saving a machine-gun whose crew had been killed in the rearguard, while a section took part in evacuating dead and wounded.

On 15th September, the company went down again to Mjara; the tank-carrying lorries which had been employed to supply the mobile column, whilst the tanks had been engaged in action, were very exhausted.

Having reached Bab Moruj on the 25th, the company was, on the 27th, engaged on the south-west slopes of Amesef at a height of 4,100 feet. Its objective was a group of houses, but the orders received were not definite, the liaison with the infantry was non-existent, and many errors ensued; so much so, that the company opened fire on some infantry who had attained the objective before them. Further to the left a section advanced beyond its objective without waiting for its infantry; and the enemy infiltrated behind the column, forcing the reserve section to intervene.

On 3rd September, one company was sent to the Amellil Wadi; delayed by the tractors, which had not the speed of the tank-carrying lorries, the company arrived when the action was practically finished.

On the 8th, it returned to Taza and took part in supplying outlying posts. One section, which was to go round the posts by the north, had a run of fifteen miles to cover on tracks. This was the extreme limit of the radius of action of the tanks without supplies.

On 15th September, the same company took part in the relief of Tiffilassenne when it covered eighteen miles on tracks.

On the 20th, the whole company supplied the post of Dahar with the assistance of old "sleighs," the chains of which broke and had frequently to be repaired under fire.

On the 25th September, another company went to Car Caid Medboh, when the weather turned bad and the roads muddy. The tanks had to trail the tractors lent by the 61st company, and were further employed to restart the artillery lorries. On 30th September, it took part in the attack on Jebel Kerkur, where the objectives allotted to the tanks were high rocky peaks, the approach to which appeared difficult. Nevertheless, the operation was carried out under good conditions, thanks to the devotion and skill of the personnel, whose machines were often balanced precariously on rocky ridges.

On the subsequent return journey the road was so bad that the tanks were forced to bivouac one evening in the open, the tanks forming a circle with the personnel in the centre; in this manner fifty miles were covered on tracks over particularly difficult country.

The other Company (61st) operated on 30th September to the East of Kerkur. In climbing the ridges which had been allotted to them as objectives, the tanks were hampered by the fire of the French long-range artillery firing from Kerkur, but remained on the plateau where the infantry afterwards joined it.

On 1st October, this Company received orders to go to the village of Ouizert, where a few inhabitants showed definite signs of wishing to negotiate. An Intelligence Officer mounted an armoured car. Received with rifle shots the Company destroyed a few houses by gunfire, and finally arrived at a group of houses flying a white flag. The inhabitants then surrendered.

Operations of the 2nd Battalion.—The 2nd Tank Battalion embarked on 18th July for Casablanca. The operations of the Company, equipped with tanks on flexible Kegress tracks, cannot be here described.

It was first sent to the Wezzan region. On the 2nd August, one company was engaged at Azjen. To this Company was allotted the mission of advancing to clear up some caves where the enemy had concentrated his resistance. A section at length forced the entrance of the caves, and came into action at point blank range. When the Infantry arrived fifteen Rifi dead were taken out of the cave. The remaining section fought during several hours to dislodge the Rifis from their caves; the tanks had breakdowns; one of them whose track was broken was repaired by the crew at twenty yards from the enemy. At nightfall all the tanks, after being repaired, withdrew to Wezzan. The Rifis did not pursue.

On 10th August, the Mobile Group of Wezzan was sent to Zituna and was to reach Amezzu; the tank company was to assist the infantry in occupying this latter point and in maintaining itself. The enemy had re-occupied Azjen and threatened the right flank. The commander of the Mobile Group decided to clean up this point of passage.

On 10th August the operation was repeated, but, this time, the enemy did not wait for the tanks, and disappeared. The tanks were reloaded on their lorries, and went to Zituna. The occupation of Amezzu was effected on the 11th without difficulty.

On the 13th the Company entered Wezzan; the rain had soaked the roads and the unloaded tanks trailed their lorries for three miles.

On the 10th and 11th September, this same Company took part in operations in the valleys of the Audur Wadi and the Annaceur Wadi, to clear the mountainous district of Achircane and Audur; but these operations are of secondary interest since the enemy evacuated the position without awaiting the tank attack.

The other company arrived at Ternal on 11th September, and participated in the Mortitef operations. At the start, the infantry passed rapidly in advance, but before reaching the first objective, Si Allal, it was checked; the tanks intervening, swept the neighbouring ravines with their fire; the enemy retired, and the infantry occupied the first objective. During the attack on the second objective, the infantry was again checked by fire. A section of tanks advanced and two sections made an effort to outflank the seat of resistance. Threatened with a turning movement, the Rifis evacuated their position. At length the

tank company arrived at the final objective, without encountering resistance, one hour and fifteen minutes before the infantry.

This well-prepared operation, during which the tanks received definite orders and well-defined objectives, was carried out under excellent conditions and without losses for the infantry.

On the 12th the troops turned east towards the Audjar Wadi. Unfortunately, the tank company received its orders too late. Obligated to seek a favourable route to descend into the valley, the company lost all liaison with the infantry, and became separated from it by about three miles, and so returned after having run seven hours on tracks.

On 16th September the two companies took part in the operations of the 3rd Infantry Division, which had been allotted the mission of capturing the Bibane massive.

One company supported the northern column, the other supported the southern column. The infantry reached their objectives without great difficulties: once again the enemy did not stand in face of tanks. The former company covered in four days nearly fifty miles on tracks, thirty of which lay over very broken ground.

On the 26th September, the two same companies took part in a new operation to the north of Wezzan to supply and reinforce the post of Bu Ganus, a post situated in very difficult country. Supplying the post each time involved a regular military expedition.

At this period the enemy had been reinforced, had dug trenches and deep shelters, literally blockading the post. Under these conditions a column marching from Wezzan to Bu Ganus would be obliged to advance in file, going and returning through a regular corridor of fire. It was now resolved to establish a large extended post to dominate the surrounding ground.

From the 22nd to 25th inclusive, several reconnaissances, including the use of a captive balloon, had enabled a very accurate idea to be gained of the ground.

The operation developed as anticipated. The tanks started before dawn, thus gaining half an hour on the infantry, so as to approach the enemy as far as possible during the night and increase the surprise effect.

In their advance the tanks everywhere cleared the enemy trenches of their occupants. The latter fled beyond the battlefield, or took refuge in deep shelters, dug out on the sides of ravines, or in caves inaccessible to the tanks although easy to search at long range.

The tanks established themselves wherever they could in front of the openings of the enemy's refuges.

They facilitated the cleaning up for the infantry, during which process twenty prisoners were captured. That task, however, could not be entirely completed.

On the 27th the tanks were employed to support the troops responsible for effecting the organization of the new defences. The enemy, impressed by the losses of the preceding day (100 killed and 60 seriously wounded were picked up) did not counter attack, and on the evening of the 27th the two companies of tanks returned to Wezzan.

The lessons of these operations seem to be the following :—

Organization.—The original organization of the tank companies appears to have attained the desired object, i.e., to form mobile fighting units capable of resistance.

The section of three tanks proved a suitable fighting unit. The enemy possessed only weak and mediocre artillery and no anti-tank weapons, so that the tanks did not fear destruction but only breakdowns from mechanical causes or as a result of bad ground.

More flexible than the section of five tanks, the section of three tanks was able, despite great difficulties of ground, to remain under the hand of its commander. Engaged for the most part in column along roads, it easily carried out its movements of closing up and deployment in close proximity to the enemy; loaded on lorries it did not overweight the columns.

Initially it included one tank armed with a gun and two armed with machine guns. But from the first engagements the tank crews and the infantry were unanimous in requesting that the proportion should be reversed, and the Moroccan Tank Section of to-day comprises two tanks armed with guns and one tank armed with machine guns. Fire on a target being, so to speak, the rule, the 37mm. gun proved better from the point of view of moral as well as from that of fire effect.

At the commencement the companies only had 10 tank-carrying lorries. On the application of those concerned this figure was afterwards increased to fifteen, so as to allow of the transport of the entire company including the reserve section (there were two emergency lorries). Thus the complete autonomy of a tank company was ensured.

It is worth noting the remarkable output of the tank-carrying lorries, and their capacity, when left to their units and allowed to carry out their true tasks. The tractors and trailers of one company (61st) proved very inferior to the lorries. This was to be expected in such hilly country, where the road system is very rudimentary. The allotment of a repair unit to the companies prevented undue deterioration of material.

To sum up, the 1st Tank Battalion in Morocco was able, as soon as it had disembarked, to adapt itself to new conditions and to be employed most advantageously with mobile groups of troops over nearly 200 miles of front.

Nevertheless, the results of the experiences in Morocco cannot be held to modify the composition of the tank units of the Home Army.

It must not be forgotten that the tanks were employed in Morocco under quite special conditions, arising equally out of peculiarities of the ground, the road system and the nature of the enemy.

Employment.—The main lesson is one calculated to inspire confidence in the material and in its personnel. The tanks achieved truly remarkable performances in the way of mileage, both from the point of view of resistance and the nature of the ground it had to cover. Runs on tracks of nine to twelve miles per day were a normal occurrence. With regard to the personnel, only those who have been in a tank can realize the superhuman effort needed during those long runs on tracks, by night or by day, in a heat which is particularly hard to bear within these machines.

The troops gave the best proof of their confidence in the tanks by applying for them for their attacks.

A second lesson is the absolute necessity of applying the official regulations concerning the liaison between infantry and tanks before and during an engagement.

Every time that an attack was prepared beforehand, and the orders were clear and definite, and liaison with infantry was assured during action, success was complete. The operation at Bu Ganus is a perfect illustration of this need.

The third lesson is the diversity of the missions allotted to tank companies, missions which, it must be admitted, have not all been provided for in the regulations—patrols, raids, flank guards, picking up dead, acting as mobile blockhouses in advance of infantry lines, etc.

They were employed in every manner, sometimes even as isolated tanks. These tasks, however, were only rendered possible because the tanks were in a good state of repair and invulnerable to enemy attacks. Yet there must be a limit to such uses. In October numerous breakdowns, showing deterioration of material, rendered the carrying out of missions by small isolated units far more difficult.

Finally, in their essential role of accompanying infantry in action, the tanks were employed more often than not in small detachments. The nature of the operations, the ground, the tactics of the enemy, imposed such a method, but here again judgment is necessary, and engagements as, for instance, the attack on Semiet on 25th August, shows the disadvantages of not engaging the tanks in depth.

Thus the experience of Morocco, after that of the Great War, proves that if among the regulations for the employment of tanks, there are some necessitated by questions of material, there are others, more numerous, which require to be adapted to the contingencies of the action. This is the affair of the commanders.

MAN-POWER IN THE TECHNICAL BRANCHES OF THE FIGHTING SERVICES

By LIEUT. H. J. COOPER, R.A.S.C.

"C'est maintenant le peuple entier qui fait la guerre."—Instruction provisoire sur l'emploi tactique des Grandes Unités.

THE outstanding lesson learnt from the campaign of 1914-18 has been that war is not wholly a military matter, nor even solely the concern of the fighting services, but an affair which involves whole nations. The profession of arms is thus no longer the preserve of the soldier. The effect of this attitude is apt to vanish during peace, certainly among statesmen who are otherwise occupied—after all, no state is organized with the sole object of forcibly absorbing others—no less than among soldiers who are normally not all gifted with the faculty of introspection. Soldiers, indeed, very rarely ask themselves the reason for the existence of their calling, and still more rarely discuss the circumstances which may prevent them from performing their role efficiently. They are apt to deduce what they call natural laws from a series of hazards, and to describe as evolutionary that which is in reality fortuitous.

At the present time the most important question touching Imperial Defence is that of Man-Power, and the most important problem for solution by the technical¹ branches of the fighting services is that which concerns this question of man-power. It is thus relevant to proceed to a consideration of the various factors which have contributed to bring this problem to the forefront of military administration. The chief factors are two in number:—

- (1) The geographical situation of the British Empire;
- (2) The effect of the Industrial Revolution on its many peoples.

¹Technical is used as no narrow adjective, but as one which embraces everything that is connected with any branch of productive industry. Militarily, the word has come to mean anything which is not directly occupied with the killing of an enemy with sword, bullet or bayonet, an unfortunate definition. In this discussion it is taken as signifying the relation subsisting between each individual man and his position with regard to industrial associations.

The second factor forms the basis of the technical aspect of the Man-Power question, and will alone be considered.

The Industrial Revolution can be conveniently described as the change wrought in Britain during the period roughly compassed by the reign of George III, 1760-1820. The Industrial Revolution is the last completed stage of our national evolution or progress; the preceding stages concerned only the family, the artisan and the domestic. It is not too much to state that this revolution has altered the character of the occupations of Englishmen; it drove them from rural to urban pursuits; it supplanted agriculture by industry.

So it came about that the type of the people altered too; is it not now said that the nation has become city bred—at least the majority of it—and that the ancient institution of the personal touch is sadly decayed? Industrial areas propagated a new life which is inadequately understood by most soldiers; its effect upon the technical men required by the fighting Services is nevertheless of the greatest importance. With any given military organization the suddenness of the precipitation of war by diplomacy, the strength of the first hostile blow and the rapidity of each succeeding blow are governed by the cumulative effect upon the enemy of the changes that have arisen in industry. Almost daily the world shrinks in size beneath electrical wave communication and war may burst upon any nation with the speed of light. The strength of the first blow depends on the enemy's military ability and his progress in the realms of pure and applied science; also on the character of his philosophies. But the rapidity of each succeeding blow is dependent entirely on the power of his Government so to organize its peoples that they may turn from the arts of peace to the business of war with the greatest possible speed and the least possible industrial dislocation. By this is meant that he must have a national and technical as well as a military mobilization scheme.

It is with the inter-relation of these two schemes that the technical branches of the fighting Services are concerned. In order that the military¹ mobilization scheme may become operative it is necessary that certain military technical services—engineer, supply, transport and stores—be mobilized at a greater rate of speed than the fighting units. Technical vehicles and apparatus have to be mobilized, inspected and allotted in order that field units may be completed and the mobilization of apparatus must proceed concurrently with that of men. Thus is the need for the rapid mobilization of technical services made apparent, and as technical personnel are kept down to the lowest possible numbers in days of peace, the need is seen to be vital.

¹Used generically to include all fighting mobilization schemes.

The factors involved are of great importance, and it is now expedient to proceed to their consideration in detail. They are five in number :—

- (1) The Factor of Provision ;
- (2) The Factor of Organization ;
- (3) The Factor of Distribution ;
- (4) The Factor of Dilution ;
- (5) The Factor of Dispersal.

1. *The Factor of Provision.*

The provision of personnel for the three Services is achieved by two methods :—

- (a) By training boys in Service establishments ;
- (b) By enlisting men of the required trades from civil life.

To consider the first method : boys between certain ages are enlisted, from many walks of life, and are taught the technicalities of the various arms that they may be soldiers firstly, technicians secondly, and non-commissioned, warrant and commissioned officers ultimately. At any given moment, those serving—either with the Colours or in the Reserve—form the body from which the senior non-commissioned and warrant officers of an expeditionary force will be drawn. Those who have passed to the Reserve will both augment that body and form the units from which reinforcements and training cadres will first be chosen. The advantages of this system are manifest. Boys grow up in the traditions and customs of the Service, and learn their technical lessons from a militant and not from a commercial standpoint. Between these points of view there is some divergence, however, a fact which is often overlooked. The disadvantage of this process is that the manual skill of the men so trained is inferior to that of a man trained for an equal time under civil conditions. The counterbalance lies in the fact that the first-named man is, in addition, a trained soldier.

To proceed to a consideration of the second method. The formation of a Supplementary Reserve has now been authorized and put into force. Its division into two categories is noteworthy ; it follows the line of the memorandum of Lord (then Mr.) Haldane, of 1907, in which he explained that there were many services necessary for a fighting force which could be performed by civilians only partially trained as soldiers. To-day there are many who on being mobilized would perform duties exactly similar to their professions or occupations in civil life. Men between certain ages are enlisted to fill varying vacancies. The lower limit depends upon the ability and skill of the man, the higher is fixed by regulation. These men will have learnt their trade from a competitive civilian point of view, and have passed the impressionable years of their life under conditions dissimilar to those of the enlisted boy. Their experience of life, possibly, will (certainly may) have biased

them against the conditions under which they will have to pass their period of service. In addition to practising their trade under different conditions and in accordance with another point of view, they will have to learn the business of soldiering, and, as all know, the art of learning becomes harder and requires greater application as the years pass. Thus it is seen that it will be more difficult in most cases to form the best subordinate commanders from such as these. The advantage of this system is that the manual skill and technical experience which a man will unquestionably bring to the Service is greater than that of the enlisted boy. The disadvantages are that, firstly, he is not such a malleable subject for Service discipline, and secondly, that his primary business is learnt last in his career.

With the aid of the recruiting departments and training establishments there are no insuperable difficulties to providing technical personnel for the regular fighting Services. Nevertheless, as that which will function in war must function in peace, if the best results are to be obtained, so must the resources available be investigated. The total available white man-power of the Empire which can be devoted to the Imperial cause is first for consideration. The means by which it has been proposed to discover the number of these are many and vary with the shade of political opinion professed by their authors. The impartial observer, however, sees but one sure means of arriving at the figure—by the use of the principle of the quinquennial census. Some allege that an annual imperial census will solve the difficulty. By others it is said that the time for the census is the day of mobilization. About the day one may differ; about the principle there is no argument. The one certain way to discover the amount of money one possesses is to count it: so it is with men. With regard to the latter case, i.e., census on mobilization, there are many difficulties to be overcome; it is perhaps the least satisfactory way to achieve the desired end. It tends to make the final preparation for an extraordinary census coincident with the final diplomatic move. It may be the last stick which will cause the scale to turn. Spies will fasten on the feverish and secret preparations for the census as the certain indicator of mobilization. Nations mobilize from fright, and fight because they cannot help it—though the League of Nations as a factor of interference is not to be ignored. The word "interference" is used as the problem is military and of the present, not evolutionary and of the future.

The use of the census papers to record physical fitness, fighting ability, experience and category may be considered undesirable; then the only alternative is a system of registration, the birth of which will be a political matter. The principle is that of complete identification by name, area, profession, trade or occupation of every male and female between certain ages who may be required to secure victory to the national arms. The results of the census or registration system, however taken, are next to be collected, and the information collated by the

administration. It seems that a special section will need to be devoted to this work ; it may be a department of the Home Office, a Ministry of National Service or a Ministry of Defence ; it certainly can never be a fighting Service. The nuclei of this department of Ministries lie in the Sub-Committees of the Committee of Imperial Defence.

Thus is the ideal outlined : that which is practicable and expedient from the point of view of the Army has been embodied in the Supplementary Reserve ; its expansion to embrace the Royal Navy and Royal Air Force will entail competition which in the absence of a Ministry of Defence it seems hard to eradicate.

2. The Factor of Organization.

The machinery for producing the available numbers of personnel having been devised, an organization to withdraw them from their civil occupations to their Service duties must be created. The normal recruiting system, which has lately been reorganized, should be the instrument by which technical personnel will be taken into the respective Services. In the past—and even after years of war subsequently to 1914—the rate of flow of recruits had been outside Service control ; men flocked to recruiting offices and were then enlisted into units almost without any definite plan. In the future the rate of speed of withdrawal will depend on the rate of speed of expansion of the organizations which will deal with them, i.e., the depôts of the technical branches. It may be that national factories and other establishments will be available for the use of corps to house and train their technical personnel, in which case mobilization of these may proceed at a greater pace than that of the fighting arms. There are limits to this pace beyond which it is both militarily and industrially uneconomical to proceed ; for example, it would be useless to withdraw miners from their occupation up to the Ministry allowance if the wastage in the field and the formation process of new units could not absorb them. With the progress of the campaign this formation process will increase in speed, but, in the first instance, it is imperative that each Service should absorb personnel to its utmost limit in order that even the skeleton training which will be necessary and peculiar to each Service may be thoroughly learnt. Though the personnel under consideration is technical, it must always be remembered that these are fighting men first and technicians afterwards. In the past all soldiers have been taught that organization and discipline march hand in hand, and no discussion as to their relative merits was to be permitted. But one important conclusion can here be drawn. Organization must now come first, i.e., it must be studied before discipline. Let those who are inclined to disagree ponder the facts of the case. In the act of random recruiting many square pegs find themselves in round holes ; organization provides a means to avoid this. Good organization, in other words, may assist to create discipline. If the right men be procured, each for his special task, when they are embodied into units, then and

there alone can they be taught the discipline of the Service to which they belong.

3. *The Factor of Distribution.*

There are four departments of State clamouring for these men to aid the prosecution of the war—the Ministry of Supply, the Admiralty, the War Office, and the Air Ministry. A proportionate allotment of recruits will thus have to be made by the Government, and this duty would most suitably devolve upon a Minister of Defence; who else could be in a position to decide the strength of the fighting Services and their components which may be necessary for the particular campaign to which the Empire is committed? Such an authority can alone possess the political and strategic information which must affect such an allotment. On the course of the combatant operations will depend the change of this allotment, and in this element of change lurks a serious danger. The course of events will need to be predicted with some certainty; therefore it must be closely studied in peace. This is important, since, in order that commanders may carry out their various operations, technical personnel in the required and changing numbers must be absorbed by units beforehand, and not merely be present with them at a particular moment. It is useless to send a hundred men to an arms factory the day before they are required to augment the output by some arbitrary percentage, as it is futile to send a dozen carpenters to the chief engineer of a corps and on the day of their arrival expect the output of duckboards from any specified shop to increase threefold.

4. *The Factor of Dilution.*

Dilution is a matter of extreme importance in industrial spheres, for the dilution of skilled by unskilled labour is a continual source of friction between employers and employees. The military problem may also be complicated by the possible dilution of white troops by coloured personnel. The British soldier has had great experience of this from a fighting point of view—divisions of native personnel officered in the commissioned and non-commissioned ranks by white men. The repulsive effect of the Industrial Revolution on native races has become an ever-growing quantity. Their self-support has been exchanged for manufacture—instead of maintaining themselves tribally or nationally, they are being taught to manufacture for the whole world. This is an economic fact which it is impossible to refute; neither can the fighting services with safety ignore the change.

The dilution of white technical labour by non-European personnel, that is, the raising of all European personnel to the ranks of warrant and non-commissioned officers, and the substitution of the private soldier or airman by "native" labour, is a thorny subject full of pitfalls. It requires long study and the closest application in peace and consummate skill of manipulation in war. Under-dilution will result in waste of

available resources and may jeopardize ultimate success, while over-dilution might result in political, racial and even religious reaction, where upon military control will be lost. It is unnecessary to elaborate this essential difficulty. With the progress of a campaign further dilution may be achieved by the use of prisoners of war; fit personnel of this category being, in the first instance, placed under the control of a Labour Directorate.

5. *The Factor of Dispersal.*

The personnel have been counted, organized, distributed, diluted and maintained in the various services; at the end of a campaign they will have to be dispersed. This dispersal is fraught with many dangers. The Great War showed only too clearly that the national attitude at the commencement of a campaign may not be that which will be dominant when it is drawing to a close. An empire which is founded on trade has to repair the ravages of war by trade and service; it is, then, imperative that all efforts be made to endeavour to return to a progressive order of social relations within and without. To do so the economic structure of an empire must be repaired and stabilized. Standards of priority of dispersal of the technical men will be raised by Government with due regard to the Service requirements. The organization which controlled the withdrawal of technical men from the community must also control their return.

Thus may the process of recruiting be reversed and the recruiter become in some measure a disperser and a reception dépôt function as a dispersal dépôt.

Allotment, maintenance and dispersal thus form the cycle of the functions of the Ministry or Committee concerned, this body being in other words the "personnel" branch of all the fighting Services. Every question of technical personnel will continue to be co-ordinated by one branch of each fighting Service, and though the administration may be delegated to departments, the maximum co-ordination and co-operation must be ensured. The intensity of co-operation may result in the rearrangement of the duties and the constitution of some of the administrative services. The question of land transportation is uppermost in the minds of all soldiers and airmen, and upon close study of Field Service Regulations, Vol. I, 1923, it is found that there are six arms and services concerned in the operation of the transportation system in any theatre of war, and four services are concerned with the design, provision and heavy repair of the various component parts of the system. The effects of co-operation upon, say, the road and cross-country transport will be to ensure that the drivers of its mechanical and horsed components will be provided by one service responsible for their reception, training, domestic economy, maintenance and the initial stages of their demobilization. A corps or service which deals only partially with this question of non-rail transport driver personnel is an

incubus equally to itself, which it misleads, and to the Army, which it fails adequately to serve. With the increasing complexity of life, the task of the fighting unit commander will become more burdensome; in order that he may be tactically efficient he will have several grades of personnel under his command; the fittest to fight and the less fit and weaker of physique for the assistance of the fighter. This controversial question is only touched upon so as to indicate the trend of modern military thought.

The causes contributory to the confusion of the last campaign will not be all of similar incidence in the future, though some which proved of minor importance in the past might well become vital with the passage of time. There will be the records of past achievements available for study. One profits, or endeavours to profit, by one's own blunders no less than by the mistakes of others, as others endeavour to learn lessons from similar sources; the complete truth is never contained in official histories and available documents; it is also frequently distorted in private reminiscence. The victors do not disclose all the facts, as their mistakes are a source of shame, while they shrink from divulging successful methods which they imagine they may need to use once more. The vanquished seldom, if ever, issue exact apologia or parade their inefficiency so that others may pursue the matter to its logical conclusion. Thus the unwritten part of the story of Man-Power during 1914-19 stands at the very heart of the whole problem. However, the services of those who were engaged in grappling with the problems will not be lost; their methods will have been perpetuated by the written as well as the spoken word. Factors which in 1914 seemed to be of small moment will in the future be of vital import. Industrial co-operation, technical training establishments, mobilization testing centres, the methods by which the officers of technical branches of the Services have been trained in peace, seem to stand out as landmarks among the many difficult issues that arose during the Great War.

It is now "laid down" with every circumstance of formality that the industrialization of the nation has left more than a fugitive imprint on the fighting Services. To ignore its effect is to say with Talleyrand, that the guilty party commits something which is worse than a crime—a blunder. The technical aspect of the Man-Power question deserves the most careful study that the fighting Services can devote thereto, in order that they may place their small block well cut and polished to the fabric of the national organization for an imperial emergency.

THE EMPIRE CRUISE

By COMMANDER JOHN G. P. VIVIAN, R.N.

On Wednesday, 9th December, 1925.

ADMIRAL OF THE FLEET THE EARL JELlicoe, O.M., G.C.B., G.C.V.O.,
in the Chair.

THE CHAIRMAN: Ladies and gentlemen, it is my privilege to introduce to you this afternoon Commander Vivian, who was at the time of the Special Service Squadron's cruise the Fleet Navigating Officer in the "Hood," and War Staff Officer, and I cannot imagine that a more capable lecturer could be found to describe that wonderful cruise than Commander Vivian. I will not keep you; I am sure you must be wishing to hear him, and I will ask him if he will be good enough to address us.

LECTURE.

THE Special Service Squadron, under the command of Vice-Admiral Sir Frederick Field, consisted of the Battle Cruisers "Hood" and "Repulse," the "Hood" flying the Vice-Admiral's flag, and the First Light Cruiser Squadron, composed of the "Delhi," "Danae," "Dragon," "Dauntless" and "Dunedin," with Rear-Admiral the Hon. Sir Hubert Brand's flag flying in the "Delhi."

With the exception of the "Dunedin," all the ships left their Home Ports on 23rd November, 1923, and had joined the flag in the Bay of Biscay, two days later. The "Dunedin," having come through the Suez Canal, joined in the Indian Ocean on 24th January, 1924, and, on our arrival at Auckland, New Zealand, was detached for service with the New Zealand Naval Forces.

In April, 1924, H.M.A.S. "Adelaide" joined the squadron at Sydney, N.S.W., and remained with the Battle Cruisers until our arrival in Home waters. The addition of this Australian cruiser to the Squadron marked the inauguration of the present policy of a continuous exchange of ships between the Imperial and Dominion Navies.

Now I will try to tell you how we endeavoured to attain some of the objects of this cruise.

To start with, this was the first opportunity which had occurred since 1914 of testing modern warships in the tropics, and much valuable information was obtained, both with regard to material and the living conditions for the personnel. With the latter object in view, the ships had been filled up to war complements before leaving England. A very large proportion of the ships' companies were young men with no previous experience of life in the tropics. We left England during a cold snap, and ten days later were sweltering in that particularly warm spot, Sierra Leone.

In the course of our cruise it was no uncommon thing for coloured people, such as natives of West Africa, Malaya and the West Indies, to be overcome by the heat while visiting the ships, so you will, perhaps, realise that a modern warship is not an ideal home in the tropics. In spite of this, the men kept remarkably well, the daily percentage of sick in the squadron being slightly less than if we had been in Home waters.

The number of officers and men who had crossed the Line previously was very small, and in the "Hood" alone, when we crossed the equator for the first time, on 12th December, 1923, over 1,000 were admitted to the Freedom of the Seas in time honoured fashion.

Neptune on this occasion was impersonated by Mr. Punshon, the Chief Signal Boatswain. To the very real regret of all who knew him, Mr. Punshon died at Melbourne, he being one of the nine casualties sustained by the squadron during the cruise. Of the others, one seaman died of malaria at Port Swettenham, a very few hours after being bitten by a mosquito, and the remaining seven deaths were all due to accidents, either on board or on shore.

This cruise was not in many respects a "joy ride." The long sea passages were utilised to carry out the ordinary gunnery and torpedo practices of fully commissioned ships, and, when time permitted, strategical and tactical exercises. In harbour the official functions, dinners, balls and so forth at times almost assumed the aspect of a heavy burden; but the heaviest burden of all was that carried by the Admiral, who, in addition to attending those functions, was expected to make speeches day after day, and often several times a day, to large, influential, and sometimes very critical, audiences.

An entirely unforeseen volume of work was thrown on the Admiral and his staff by the enthusiasm of the people. For instance, on our arrival in Australia he received over 2,000 private communications containing expressions of welcome, requests for autographs and interviews, enquiries after relations in England, dealing with inventions and numerous other subjects. All these had to be read, and the majority of them answered.

Another object of this cruise was to give the personnel of the squadron an opportunity of seeing the trade routes of the Empire which at some future date they may be called upon to defend. The chief landmarks on these trade routes are, of course, terminal ports. With the exception of Hong Kong and the ports of India, we visited all the principal terminal ports of the Empire outside the British Islands.

The battle cruisers steamed 36,000 miles, spending forty-three per cent. of their time at sea, while the smaller cruisers steamed 45,000 miles, spending almost exactly fifty per cent. of their time at sea.

At the end of the cruise I asked one of the civilians who accompanied us what had made the deepest impression on his mind during his ten months at sea, and he replied: "The intense loneliness of the sea and the scarcity of shipping, even on the great ocean trade routes." I think that answer sums up, very tersely, the greatest difficulty with which the Navy has to contend in defending trade. It was a point on which I heard more than one Naval officer remark, especially those with no previous experience of foreign service or of war service outside the North Sea. They knew full well that the vast volume of shipping on which the very existence of the Empire depends was there, although for the most part unseen, and it made them realise how difficult a job it is going to be to find and hunt down a few enemy raiders working in those wide ocean spaces. For myself, the arrival of the squadron at each of those ports, more especially at the places with very large populations, such as Sydney, Melbourne, Auckland and Vancouver, will be among the unforgettable memories of the cruise.

Let me tell you of our entry into Sydney Harbour as a typical example. I may say that there is a certain amount of inter-State jealousy in Australia with regard to their harbours, but there is one point on which all Australians are agreed—namely, that Sydney is the most wonderful harbour in the world. Freemantle was justly proud of being able to berth the whole squadron alongside modern wharves, in addition to many merchant vessels. Melbourne has a vast expanse of anchorage water and almost unlimited wharfage facilities. The approaches to Hobart, Tasmania, up the Derwent River, are magnificent in the grandeur of their scenery. But one cannot be in the Commonwealth for more than a very few hours without being asked "Have you seen Our Harbour?" and "Our Harbour" is Sydney.

At 9.30 a.m., on 9th April, we steamed out of thick mist into glorious sunshine, and at 10 a.m. the squadron passed between Sydney Heads. Overhead a squadron of aeroplanes formed up to escort us into harbour. Here an amazing sight met our gaze. The whole harbour, on either side of the 200-yard broad channel, was covered with every imaginable description of boat and yacht, from four-oared racing skiffs to the three-decked Sydney ferry boats, capable of carrying three hundred people; and every craft was crowded to its utmost capacity with enthusiastic

sightseers. The whole of the foreshore and all the headlands, which fringe the harbour like the teeth of a comb, were packed with a multitude of cheering people.

So great was the noise of cheering, brass bands and hooting syrens, that it was a matter of great difficulty to make oneself heard on the bridge of the "Hood." It was estimated that over half a million people, that is ten per cent. of the total population of Australia, witnessed the arrival of the squadron that day.

At Auckland, which also possesses a harbour with a narrow and somewhat tortuous approach, a similar scene was witnessed ; our welcome on this occasion being intensified because the "Hood" was flying the flag of Lord Jellicoe, the Governor-General, for His Excellency had honoured the squadron by accompanying us from Wellington.

Not only were the arrivals of the squadron at various ports the occasions for the expression of great enthusiasm, but our departures would see vast crowds thronging the wharves and lining the foreshores intent on wishing us God-speed.

Another object of the cruise was to give our people overseas an opportunity of seeing the latest types of ships, and it is certain that they took full advantage of that opportunity.

The total number of visitors who actually came on board the ships, was 1,936,000, and of these three quarters of a million came on board the "Hood." Many of these people travelled long distances, especially in Australia and New Zealand, so great was their eagerness to inspect a modern warship. I remember, at Freemantle, meeting an old man walking round the ship with his three sons, all men well over six feet in height. I asked him from where they had come, and he told me that they had been travelling for a week by horse and rail, so determined was he that his sons should see part of the British Navy. That was no isolated instance, as it was mere chance that I happened to speak to that particular man.

At most places visited, the ships berthed alongside wharves, Harbour Boards and Shipping Companies being extremely generous in providing these facilities. This generosity made it possible for many thousands of people to come on board who could never have been transported by boat in the time available. The ships were always open to visitors, the forenoons being devoted to organised bodies, such as ex-Service men, Boy Scouts, Girl Guides, and school children.

Incidentally, wherever we went we found the Boy Scout movement one of most vigorous growth. No Boy Scout could show greater pride in his uniform and general bearing than the coloured Scouts in West Africa and Fiji.

At times we were almost overwhelmed with visitors ; for instance, at Melbourne some 35,000 people visited the ship in one day. The

officers and men who had to live in the ships, and even work under these conditions, found this sort of thing a little trying at times, but the behaviour of the crowds was invariably excellent. As the ages of our visitors varied from a few months to ninety years, one could but expect a certain number of minor accidents, although we did our best to protect them from their own rashness. At times our doctors were kept busy attending to fainting women and to those who had incurred small injuries. We were fortunate to have no case of serious injury during the cruise.

In addition to the odd two million people who boarded the ships, hundreds of thousands saw the squadron. Before leaving any place our route was published in the local papers, giving the exact time the ships would pass coastal towns, settlements and prominent headlands, and whenever we closed the land enormous crowds could be seen on the foreshore, while many others risked the perils of the deep and came out in any craft available in order to obtain a closer view.

When it was not possible to pass the towns in daylight, a searchlight display was given, and those displays, we heard, were always highly appreciated. Searchlight displays were also given at every place visited. At Sierra Leone they had a somewhat unexpected effect, for when the beams were trained on Freetown the natives hurriedly took cover, apparently under the impression that, in return for their generous hospitality, we intended to bombard their town.

I suggest that that incident shows how very desirable are occasional cruises of this nature. Let me tell you another one which points the same lesson.

At Hobart, Tasmania, the squadron was accorded as warm a welcome as at any other place in the Empire. Imagine our astonishment when, the day after our arrival, a leading daily newspaper asserted that the ships were partly manned by convicts. The paper in question very quickly contradicted the story, but it had a somewhat amusing sequel. That afternoon an old lady was being shown round the "Hood" by a grizzled petty officer of some years' service. In the course of conversation she asked him how many years he had done in the Navy. The petty officer told her that he had done a long time, and was in his second period, to which she replied: "Oh! you must have been *very* naughty."

At every British place visited a Naval Brigade, about 1,500 strong, was landed to march through the city, the Governor-General or Governor taking the salute. These marches invariably evoked the utmost enthusiasm and, I think, accomplished a great deal in bringing to the surface that pride of Empire latent in the vast multitudes which lined the routes.

Wherever we went we received overwhelming hospitality, our hosts sparing no pains to give us a good time and show us their country. Despite

the endless round of official entertainments, large numbers of men were given opportunities by the various Governments of seeing something of the country districts, and still more were received into the homes of the people. They thus obtained a very good insight into their hosts' lives, their ideals and their hopes. That knowledge cannot fail to be disseminated, not only in the Navy, but in countless homes in the Mother Country; and one may hope, with, I think, justification, that the experiences of this cruise will result in inducing men of the right type, with whom the sailors came in contact, to test their fortunes in the great Dominions. I know that, in fact, men of the squadron, now time expired, have gone back to Australia and New Zealand.

Unfortunately our stay in South Africa and Canada, the two Dominions where the majority of the population live inland, was too short to allow many of us to get in touch with those sections of the people who seldom, if ever, see the ocean; and it is just those people who find it so difficult to realise that this Empire exists only by virtue of its sea trade routes or to visualise the real necessity for Naval Defence. In Australia and New Zealand, where the majority of the population live on the seaboard, that necessity is self-evident, resulting in an appropriation of a considerable part of their revenue to naval purposes.

A small party of officers and men travelled overland from Cape Town and rejoined their ships at Durban. In Canada a party of about 400 travelled across the Rockies from Vancouver to Edmonton, and were received with great enthusiasm by the prairie farmers. From Quebec the Admiral and his staff made an extended tour including Montreal, Ottawa, Toronto and Hamilton, while a large naval contingent, including two field guns, spent a week at Toronto visiting the Canadian National Exhibition. Those visits, short as they were, undoubtedly did a great deal in educating the inland people on this matter of sea power, but it is quite certain that very much more remains to be done.

No words of mine can do justice to the enthusiasm displayed throughout the Empire. An enthusiasm inspired, not by any personal motive, or because we came in the finest ships in the world, but because we were representing to the best of our ability, the Mother Country and all that those two words mean to our people living beyond the seas. For no matter where you go in the Empire, these islands are referred to as "Home," even by those who have never seen them and whose parents and grandparents have probably never seen them.

During a cruise of this kind the Press is a very important factor, and no pains were spared to give Press representatives every possible facility.

On our arrival at each place the Admiral gave a collective interview to all Press representatives who cared to come on board, after which

they were shown over the ship before the situation became impossible due to the crowds.

The Press was always very ready to help us, and at times we sorely needed its assistance in such matters as explaining to the public that, as some officers and men had to be on duty, the whole of the personnel of the squadron was not available to be entertained at the same moment ; the impossibility of the ships being open to the public for every minute of the day, for the men have to feed and ships have to be cleaned ; and, perhaps the most important of all, that with the vast numbers of visitors it was quite out of the question to arrange a personally conducted tour for everyone who came on board. The best we could do was to label the salient points of interest and station guides all over the ship to direct the people where to go.

One of the outstanding causes of any success achieved by the squadron was the general behaviour and bearing of the men. Nothing impressed the general public so much as the bluejackets and the Royal Marines. Despite the lavish hospitality and all the temptations to which men, the majority of them young men seeing the world for the first time, were exposed, not one single instance of misbehaviour was reported by the shore authorities during the whole cruise. This was a matter which never failed to extract expressions of admiration from Chiefs of Police and others, in the local papers at every place visited. It must be remembered that the ships were taken straight out of the Atlantic Fleet and the ships' companies were in no way picked ones.

Time will not permit me to tell you about all of the twenty-five places visited, so I propose to confine myself chiefly to places which are not very frequently visited. Although I shall say little about South Africa and Canada, please do not think that we received any less cordial a welcome in those Dominions than elsewhere.

In Africa the whole squadron visited Sierra Leone and Cape Town.

At the former place some of the Paramount Chiefs of the Hinterland tribes visited the "Hood," bringing with them their wives, families and their State umbrellas. They were very deeply impressed with all that they saw, and one regretted one's inability to understand any of their excited comments.

After the West Coast of Africa we fully appreciated the climate of Cape Town, where Christmas and the New Year were spent. The battle cruisers had to lie in Table Bay, where an almost incessant swell made the transport of visitors always difficult and sometimes dangerous ; however, nothing daunted the people in their determination to inspect the ships. Although the time factor limited expeditions to places in the

Cape Province, we were enabled to see something of the fruit growing industry and the people, both English and Dutch, did their utmost to show us as much of the Province as possible.

The Cruiser Squadron parted company from the battle cruisers at Cape Town and, after visiting East London and Durban, went to Kilindini and Mombasa.

The battle cruisers, en route to Zanzibar, anchored for a few hours off Mussel Bay, East London and Durban. Unfortunately, the heavy swell which prevails on that coast prevented any of the great crowds, which had come down to the coast to see the ships, from coming on board.

The ships were escorted into Zanzibar Harbour by an extremely picturesque procession of Swahili canoes. It was here that we were privileged to meet one of the most impressive native rulers in the Empire. His Highness the Sultan took the greatest interest, not only in the entertainment which was provided for us, but also in our work on board. He has a very pronounced predilection for anything English.

The cruisers rejoined the day we left Zanzibar, and after an extremely hot passage across the Indian Ocean, we spent four days at Trincomali, in Ceylon. This was one of the rare occasions when, owing to the small number of visitors, we had an opportunity of giving the ships a coat of paint. On leaving, the squadron again divided, the cruisers going to Penang and the battle cruisers to Port Swettenham, a particularly hot harbour about twenty miles from Kuala Lumpur, the capital of the Federated Malay States.

The warmth of our welcome here and the overwhelming hospitality we received reconciled us even to the climate. Not only did the Europeans give us a wonderful time, but the Chinese community, many of whom are very wealthy, extended us an equally warm welcome.

Our visit to Singapore synchronised with the wettest week in the history of that place, the only fine day which was vouchsafed to us being, fortunately, the day of the ceremonial march.

Perhaps the outstanding impression left on my mind by our visit to Malaya is the enthusiasm, determination and confidence of the people. The rapid development of the country in the last twenty years is quite astounding, and the co-operation which exists between the British, Chinese and Malayan communities is an example which might well be followed by some other parts of the Empire with mixed nationalities. The intense loyalty of all classes of society is not exceeded anywhere in the Empire.

Our arrival in Australia coincided with the decision of His Majesty's Government to stop work on the Singapore Naval Base. That decision created a feeling of profound depression and alarm among all classes of Australians, who were quite convinced that the Mother Country intended to desert them. Looking back now, I cannot help feeling that the decision came at an opportune moment, for it made Naval Defence a burning question of the hour. Every Australian wanted to know the pros and cons of the Singapore Base and also, if there were to be no base, how Australia could best help to defend herself. No matter to whom one was talking, the conversation always turned into a barrage of questions, ranging from grand strategy and the functions of naval bases to the details of construction, cost and upkeep of warships.

While in Western Australia a party of officers visited one of the Group Settlements, and were very favourably impressed by all that they saw. At first new settlers find the life hard and they miss some of the so-called amenities of life in this country; but after a short time they realise that the free open-air life in a magnificent climate is far better than living in England with the ever-present fear of unemployment. They also realise that, with hard work and determination, they have every opportunity of doing well for themselves and their families. All the settlers met with who had been in the country for more than six months were entirely satisfied with the life and their prospects.

The one eternal cry in Australia is for settlers of the right type, that is, for producers. The yellow peril is, far more than we at home, perhaps, can realise, an ever-present dread, and they feel strongly that, unless they can populate their vast territories with British stock, they are a lost country.

In Tasmania I was one of a party of eight officers who went for a motor tour of the North Coast of Tasmania at the invitation of the Government. Every town and village through which we passed received us with open-handed hospitality, and during those three days we saw a great deal of that very beautiful island which seems to possess unlimited agricultural possibilities.

After visiting all the State capitals in Australia with the exception of Brisbane, to which place the cruisers paid a visit, the battle cruisers and "Adelaide" went to Wellington, while the cruisers visited the South Island of New Zealand.

Perhaps I can best convey to you the impression that New Zealand made on us by telling you that after a very few days in the Dominion one heard of officers and men making enquiries after jobs, having in mind the time when they would have to retire from the Service.

Our arrival at Wellington, unfortunately, saw the outbreak of a general railway strike, which greatly interfered with the arrangements

made by our hosts to send parties of men into the country districts and, still worse, prevented large numbers of people coming to Wellington to see the ships. However, the strike collapsed after a week, and for the remainder of our stay, we were inundated with visitors and especially children.

The day after our arrival was Anzac Day, and we were all greatly impressed with the general and solemn observance of that Day of Remembrance. On this day in particular the children are indoctrinated with the spirit of loyalty and patriotism. Officers from the squadron visited a number of the schools to read a message from the Admiral. The school to which I went was, I was told, situated in a part of the city in which a certain amount of Communism is said to exist. I walked through that part of the city, and, from the way in which my uniform was received, would hazard a guess that Wellington has not a very fertile soil for that particular political creed.

During our visit to Auckland, where the cruisers again joined the Vice-Admiral's flag, I was one of a party of officers who accompanied Admiral Brand on a visit to Rotorua, a place famous for its hot springs and geysers. Here the Arawa tribe of Maoris gave us an enthusiastic welcome. The warriors performed hakas, and the womenfolk danced their Poi dances for us. On one evening they entertained us at a concert which will not be forgotten by those fortunate enough to be present, for not only are many of the Maori songs very beautiful, but the Maoris have extremely melodious voices. Many of us were, I think, under the impression that these people are a fast disappearing race of barbarians, but this is very far from the truth. They are increasing in numbers, and many of the better educated among them are entering the various professions.

New Zealand was left behind with feelings of very real regret, for it is undoubtedly the most homelike of all the Dominions.

Our next port of call was Suva, in the Fiji Islands. The Fijians are a very interesting race, and we were struck with their intelligence and good manners; unfortunately, they are extremely lazy. The majority of the work on the sugar plantations is done by imported Indian labour. The Indian population, due to the efforts of paid agitators, we found to be somewhat discontented and, in the opinion of the Governor, the visit of so powerful a squadron had a very salutary effect on that section of the population.

We left Suva on the 27th May, 1924, and, en route to Honolulu, stopped for a few hours off Apia, the capital of Samoa. Here the shallow water prevented the squadron closing the shore nearer than five miles, but a number of war canoes, some of them manned by over forty rowers, came out to meet us, and the natives presented the ships with large quantities of fruit. The Administrator, General Sir Spafford Richardson, told us that the Samoans are very happy and

contented under British rule ; apparently a very different state of affairs existed when Samoa was a German colony. From being a decadent and fast disappearing race, they are now rapidly increasing in numbers, and have once more become a virile people.

The squadron arrived at Honolulu, our first port of call outside the British Empire, escorted by forty aeroplanes sent out from Pearl Harbour to greet us. When we left we were again provided with a large aerial escort. Although Honolulu Harbour is small, the whole squadron was berthed alongside, a fact which greatly added to our comfort, in addition to enabling us to see more of this very beautiful Hawaiian island than would have been possible if we had had to depend on boats. Nothing could have been more gratifying than the warmth of the welcome extended to us by the naval, military and civil authorities, who vied with one another in doing everything possible to make our stay enjoyable, and they certainly succeeded. The people generally gave one the impression of being imbued with the most friendly feelings towards Great Britain.

I have already mentioned our visit to Western Canada, and have only time to tell you that both at Victoria and Vancouver City, B.C., we were given a tremendous welcome.

San Francisco was our only port of call outside the Empire besides Honolulu. Here again our American friends received us with open arms. I must tell you that until quite recently San Francisco was most definitely anti-British, a very large proportion of the population being German and Irish Americans. So much was this the case that a British flag could not be displayed in the city. Our arrival found the whole city lavishly decorated with flags, among which the Union Jack and White Ensign largely predominated.

The Navy Department had sent a squadron of their five latest battleships to meet us, and nothing could have exceeded their courtesy and friendship. Those four days and nights were one endless round of entertainments and official functions. As at Honolulu, the squadron went "dry" as a compliment to our hosts, and this action was much appreciated by the authorities. The only "dry" spots in California, however, seemed to be the British and United States ships!

After passing out through the famous Golden Gate, we headed South. The Cruiser Squadron now parted company from the battle cruisers and "Adelaide," and proceeded round the Horn, visiting the West and East coasts of South America. Our regret at parting was to a certain extent mitigated by the knowledge that we were destined to meet again before our return home.

One of the most interesting episodes of the cruise was the passage of the battle cruisers through the Panama Canal, the "Hood" being by

far the largest ship which had ever done that transit. For sheer efficiency it would be very difficult to beat the way in which the big ships were handled. There was a complete absence of shouting or excitement on the part of those responsible for taking us through safely. Each of the six locks to be negotiated is only fifty-four inches wider than the "Hood's" greatest beam, which is well below the water line, and on no occasion did our bulges touch the lock sides. The "Hood" was under weigh for exactly ten hours in the Canal, and we stayed for one night at the Pedro Miguel Lock, whence many of us took the opportunity of going to see the very interesting town of Balboa and the surrounding country. We found the climate during our short stay very pleasant, and the Americans stationed there have no complaints. In fact, appointment to the Canal Zone appears to be much sought after, perhaps on account of the "dry" zone being only ten miles wide.

After passing through the Panama Canal, four extremely hot days were spent at Jamaica, followed by a fortnight of fog and rain at Halifax, and from there we went up the St. Lawrence to Quebec. The French Canadians extended to us a most gratifying welcome, and as our visit progressed they took more and more interest in the ships.

Our last visit was to the oldest British colony and first British Dominion—Newfoundland. St. John's Harbour being far too small to accommodate the battle cruisers, we anchored on the west side of the peninsula about twelve miles by road from the capital. The festivities arranged for our benefit had, in great measure, to be cancelled owing to a terrible motor accident in which two officers belonging to H.M.S. "Constance," one of the ships on that station, were killed.

At 10 a.m. on 28th September, 1924, the cruiser squadron from South America rejoined off the Lizard, and the Special Service Squadron steamed up-Channel under the Vice-Admiral's flag for the last time. At 4 p.m. that day, after steaming past the "Hood" and cheering ship, the ships dispersed to their Home Ports.

Those ten months, in which we visited all the Dominions and a large number of the Colonies, and had opportunities of meeting their leading citizens, have left strong impressions on my mind. Among them are a few which may be of general interest.

Speaking of the Empire as a whole there is undoubtedly a very strong sentiment in favour of immigration from the Mother Country, always with the proviso that such immigration can only be a success if markets are provided for the goods produced by the new settlers; and responsible opinion overseas considers that the provision of markets is a matter for the Mother Country. Further, those settlers must be producers and not parasites on society; men who are able and willing to work, and to work hard. For such as these it is obvious, even to the uneducated

eye of the Naval officer, that there are unlimited opportunities in the great Dominions.

Everywhere we went a feeling exists that the Empire should be self-supporting, both in trade and defence. That feeling naturally varies to some extent in the different Dominions and Colonies ; but the desire to promote the strength and prosperity of the Empire as a whole, by encouraging trade between its component parts, is universal. As the volume of inter-Imperial trade increases so also will increase the realization of the necessity for its protection and for the adequate Naval defence of the whole Empire.

But my first and foremost impression, one which I am quite certain is shared by every officer and man who took part in the cruise, and one which I have attempted to convey to you this afternoon, is the deep and abiding affection entertained in all British countries overseas for the Mother Country ; and, above all, the intense loyalty felt towards the throne and the person of His Majesty the King.

In an Empire such as ours, the component parts of which are separated by thousands of miles of sea, time and distance must tend to dull those feelings, and it is impossible to exaggerate the good effect of a cruise like this in revivifying the spirit of friendship and comradeship between the Mother Country and the Dominions and Colonies, and in making them feel that they are all parts of one Empire. No one could fail to have been deeply moved by the enthusiastic scenes which we witnessed, and, though they may be partly attributed to the excitement of the moment, I am convinced that they had their origin in something much deeper, in a sentiment of common kinship, common ideals and pride of race.

There was no discussion.

THE CHAIRMAN :

I would like, before proposing a vote of thanks to the lecturer, to make one or two remarks, more in confirmation of what the lecturer has said than for any other purpose. First I would like to emphasise as strongly as I possibly can the exceeding value of the visit of the Special Service Squadron to our Overseas Dominions. When I went out to the Dominions in 1919 I found that the recollection of the visit of the United States Fleet in 1912 was still extremely strong all over the Dominions of Australia and New Zealand, and I felt that unless something was done to show to the people of our Overseas Dominions that we had some ships of our own somewhat larger than the light cruisers that are out there at the present time, it might be thought that only the United States possessed a battle fleet navy, and I took it upon myself to write home to the authorities to urge that a visit should be paid by a battle squadron to our Overseas Dominions ; at the same time it appears to have been contemplated at home to send this Special

Service Squadron. It is impossible to exaggerate the value of that visit. The only thing that I would like to impress upon the authorities in this country is that it should not be by any means the last visit paid by a big squadron to our Overseas Dominions. Such a visit should be paid certainly once every three or four years, in order that our kinsfolk overseas may realise the development of our Navy, and the fact that it is still in being, and is growing more efficient with every day that passes. The example of might and efficiency presented by our Special Service Squadron is not likely to be forgotten, nor to be wiped out by even the recent visit of the United States Battle Fleet to our Overseas Dominions.

In the next place, I should like to add my tribute to that which has been paid by the lecturer to the great personality of the Vice-Admiral Commanding that Squadron. He was called upon to take part in every social function; he was called upon to do the ordinary work of a squadron; he had to carry out an immense amount of correspondence; and he was constantly and continually called upon for a speech, and I never heard him make a speech—and I heard him make a great many—that did not go down with the audience better than any speech I think I have ever listened to before or since. He always began by telling an amusing story, and where he got his stock of stories from I cannot imagine; but they never seemed to cease. Again, I would like to pay a tribute to the splendid bearing of the officers and men of that squadron. The officers threw themselves heart and soul into everything that they were asked to do. To go on board one of those ships when the visitors were being shown round was to realise how keenly officers and men were working to make their visit a success. To go on board the "Repulse," again, on the day of a children's party, made one marvel as to how the officers and men could throw themselves into the entertainment of children in the way they did. The men themselves, as the lecturer has said, behaved magnificently on shore. So far as I am aware, during their visit to New Zealand there was not one single case in any port that was visited where the authorities did not compliment the British Navy upon possessing such splendid individuals in their personnel.

The lecturer has mentioned the fact of H.M.A.S. "Adelaide" joining the Special Service Squadron, this being the first case in which there was an interchange of ships between the Dominion Navy and the Imperial Navy. Again, I would like to emphasise the exceeding value of that interchange. It is being carried out now; ship after ship is being exchanged between the Imperial Service and the Royal Australian Navy, and I am quite certain that each ship that visits one of our fleets from the Royal Australian Navy goes back with the minds of the personnel enlarged, and with the keenest possible desire that when the next ship goes to the Imperial Service Squadron they shall be able to show that they are not behind us in efficiency and smartness. Similarly, the visits paid by the British ships to the Royal Australian Navy will create a spirit of competition which is of inestimable value in the future. I hope that in addition to the exchange of ships we shall see also an exchange of personnel. The more the two navies mix, the better will it be for both.

In conclusion, I am quite sure that the audience who have listened to this most interesting lecture will accord the lecturer a very hearty vote of thanks, indeed.

The resolution was then put and carried with acclamation.

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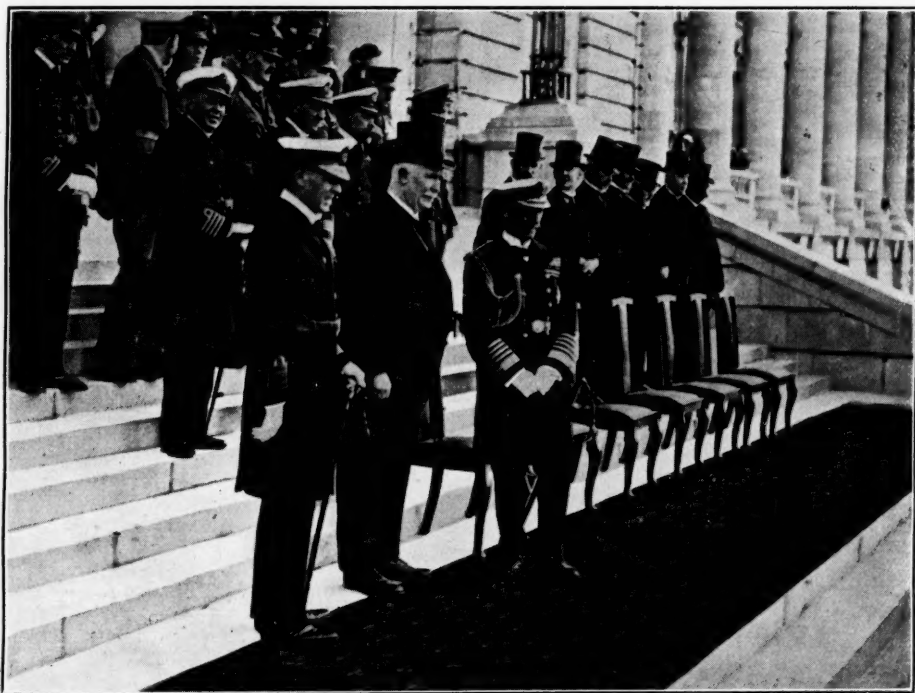
VICE-ADMIRAL R. A. HOPWOOD, C.B.: Ladies and gentlemen, I have the honour to propose a very hearty vote of thanks, indeed, to Lord Jellicoe for presiding this afternoon. I am sure we are all extremely grateful, and those of us who have had the privilege of being shipmates of his are always extremely glad to have the privilege of a sight of him, wherever it is.

There is one point in connection with the lecture which I have never seen mentioned anywhere. It struck me at the time very much indeed, when I noticed it, that three great voyages round the world have ended probably on the same day, the 28th September. One was the American Airmen, 28th September, 1924; one was the Special Service Squadron, the same day and year; and the other was in 1580, when Sir Francis Drake arrived in Plymouth "about the 26th." It is very curious that three such remarkable voyages should have ended on that date.

The resolution was carried by acclamation.



H.M.S. "HOOD" IN THE PANAMA CANAL



Vice-Admiral	The (late) Rt. Hon.	Admiral-of-the-Fleet
Sir Frederick J. Field	F. W. Massey	Viscount Jellicoe

THE GOVERNOR-GENERAL OF NEW ZEALAND
REVIEWING THE NAVAL LANDING PARTY

THE EMPIRE CRUISE



*From a photograph supplied by
the builders
Messrs. Sir W. G. Armstrong Whitworth Aircraft, Ltd.*

EMPIRE COMMUNICATIONS
—THE NEW WAY
THE TRIPLE ENGINE AIR LINER "ARGOSY"
(See p. 323; also "Air Notes" p. 419).

*By courtesy of
Imperial Airways, Ltd.*

AIR COMMUNICATIONS IN THE MIDDLE EAST

By AIR VICE-MARSHAL SIR W. S. BRANCKER, K.C.B., A.F.C.,

On Wednesday, December 16th, 1925, at 3 p.m.

SIR PHILIP SASSOON (Under-Secretary of State for Air) in the Chair.

THE SECRETARY: I regret to inform you that the Secretary of State for Air has to be at his place in the House of Commons at this hour to make an important announcement, but I am also pleased to tell you that I have succeeded in getting the Under-Secretary, Sir Philip Sassoon, to take his place.

SIR PHILIP SASSOON: The Secretary of State, who was to have been here in the Chair this afternoon, has asked me to express his great regret to you for the fact that he is not able to come. He has to be in the House this afternoon to make an announcement in answer to a question which I think will be of interest to some of you here. It is to the effect that the heads of agreement between the Air Ministry and Imperial Airways, Limited, have now been signed, and at the end of next year there will be a fortnightly service running between Cairo and Karachi by way of Bagdad and Basra for goods and passengers and mails, which will be operated by three-engine machines. This, in view of the unfrequented nature of the route, is very important, because it will, I hope, make forced landings very improbable. I think that this will be the first important link in the chain of inter-Imperial communication by means of air transport, which will one day unite all the different parts of the British Empire all over the world. I believe that Sir Sefton Brancker is going to devote a part of his lecture to this topic, so I will not detain you any longer.

LECTURE.

IT is impossible for me to know just how much you realise what has been done in air transport during the past six years, so I think it will be as well if I outline very briefly what has been accomplished in Europe and other parts of the world before I get right down to the subject of my lecture, which is the Middle East. As you all know, we have been flying across the Channel now for the last six years, ever since 1919. Personally, I have always looked upon these cross-Channel services in the light of an experiment which would give us data from

which to build up greater things throughout the Empire, and this prediction is about to come to fruition. Having had six years' experience on the cross-Channel services, we have put our hand to the plough in the creation of a real Imperial link.

British air transport has had a somewhat chequered career. In the first eighteen months after the war it was told to go and fly by itself; no one would help it. Then, after a crisis and general trouble, a subsidy was given which was admittedly extravagant. During that year a Committee sat on the question, and another scheme was evolved, which came into operation in April, 1922. After six months of that scheme it was found to be unpractical, and we had to sit down and modify it, and for another eighteen months we ran on the modified scheme. During that eighteen months another Committee sat, the Hambling Committee, and reviewed the whole position again, with the result that the Imperial Airways scheme was approved. That is the scheme to-day, and that scheme has now been in operation for eighteen months.

Well, this somewhat hectic existence, four changes of policy in six years, naturally has not been conducive either to efficiency or progress.

The Imperial Airways scheme to-day is simple. The Government gives a total sum of £1,000,000 subsidy, spread over ten years on a sliding scale, starting with £137,000 a year now, and dropping to £32,000 a year in the tenth year; and for that £1,000,000 the Company has to fly about one million miles a year; beyond this they can go where they like, and they can do what they like so long as they use British personnel and British aircraft. This system gives the business man an absolutely free hand to take on those services which he thinks can be made a commercial success. Imperial Airways have been flying for eighteen months, and therefore they have got eight and a half years longer to run. They have a monopoly of subsidy in Europe, and our policy so far as air transport in Europe goes, is to bring this new industry on to a paying basis as soon as possible, quite regardless of its value from the national influence point of view, and quite regardless of its value from the military reserve point of view.

The results are worth investigating. A good many people are disappointed at the progress which has been made during the past five or six years, but it is really not so bad. In 1920 there were 467 passengers carried in British aircraft and 120 tons of goods. In 1924 the passengers had gone up to 13,000, and the goods went up to 541 tons. In 1925, for the first eight or nine months or so, there were already 13,000 passengers and 378 tons of goods, and I hope that 13,000 will go up to about 15,000 or 16,000 before the end of the year, and that the goods may be up to somewhere about 600 tons.

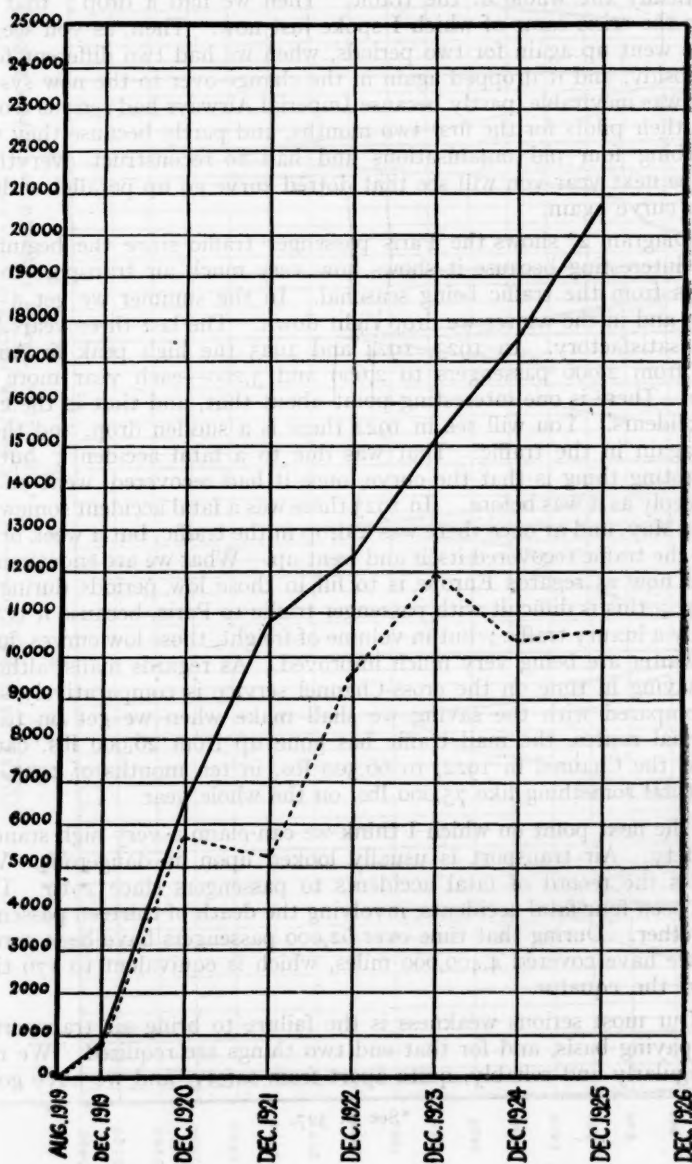
In Diagram 1 a curve shows the numbers of passengers carried across the Channel by all nations—France, Britain, Holland and Belgium

Diagram 1.

ANNUAL AIR TRAFFIC ON LONDON-CONTINENT ROUTES

TOTAL PASSENGERS —————

PASSENGERS CARRIED IN BRITISH MACHINES - - - - -



—from the start. You can see that the black line, which is the total number of passengers, has gone up absolutely steadily, and that the total reached by the end of 1925 was 20,700. The British curve is not so good. You can see that for the first eighteen months we were carrying practically the whole of the traffic. Then we had a drop; that was when the crisis came of which I spoke just now. Then, as you see, the curve went up again for two periods, when we had two different forms of subsidy, and it dropped again in the change-over to the new system. That was inevitable, partly because Imperial Airways had serious trouble with their pilots for the first two months, and partly because they were absorbing four old organisations and had to reconstruct everything. I hope next year you will see that dotted curve go up parallel with the main curve again.

Diagram 2* shows the Paris passenger traffic since the beginning. It is interesting because it shows how very much air transport to-day suffers from the traffic being seasonal. In the summer we get a high peak, and in the winter we drop right down. The last three years have been satisfactory. In 1923, 1924 and 1925 the high peak in August goes from 2,000 passengers to 2,600 and 3,200—each year more and more. There is one interesting point about that, and that is the effect of accidents. You will see in 1922 there is a sudden drop, and then a rise again in the traffic. That was due to a fatal accident; but the interesting thing is that the curve, once it had recovered, went on just as steeply as it was before. In 1923 there was a fatal accident somewhere about May, and at once there was a drop in the traffic, but a week or two later the traffic recovered itself and went up. What we are endeavouring to do now as regards Europe is to fill in those low periods during the winter; this is difficult with passenger traffic to Paris, because it is very largely a luxury traffic; but in volume of freight, those low curves during the winter are being very much improved. As regards mails, although the saving in time on the cross-Channel service is comparatively small as compared with the saving we shall make when we get on to the Imperial routes, the mail traffic has gone up from 26,900 lbs. carried across the Channel in 1922, to 66,500 lbs. in ten months of 1925, and will total something like 75,000 lbs. on the whole year.

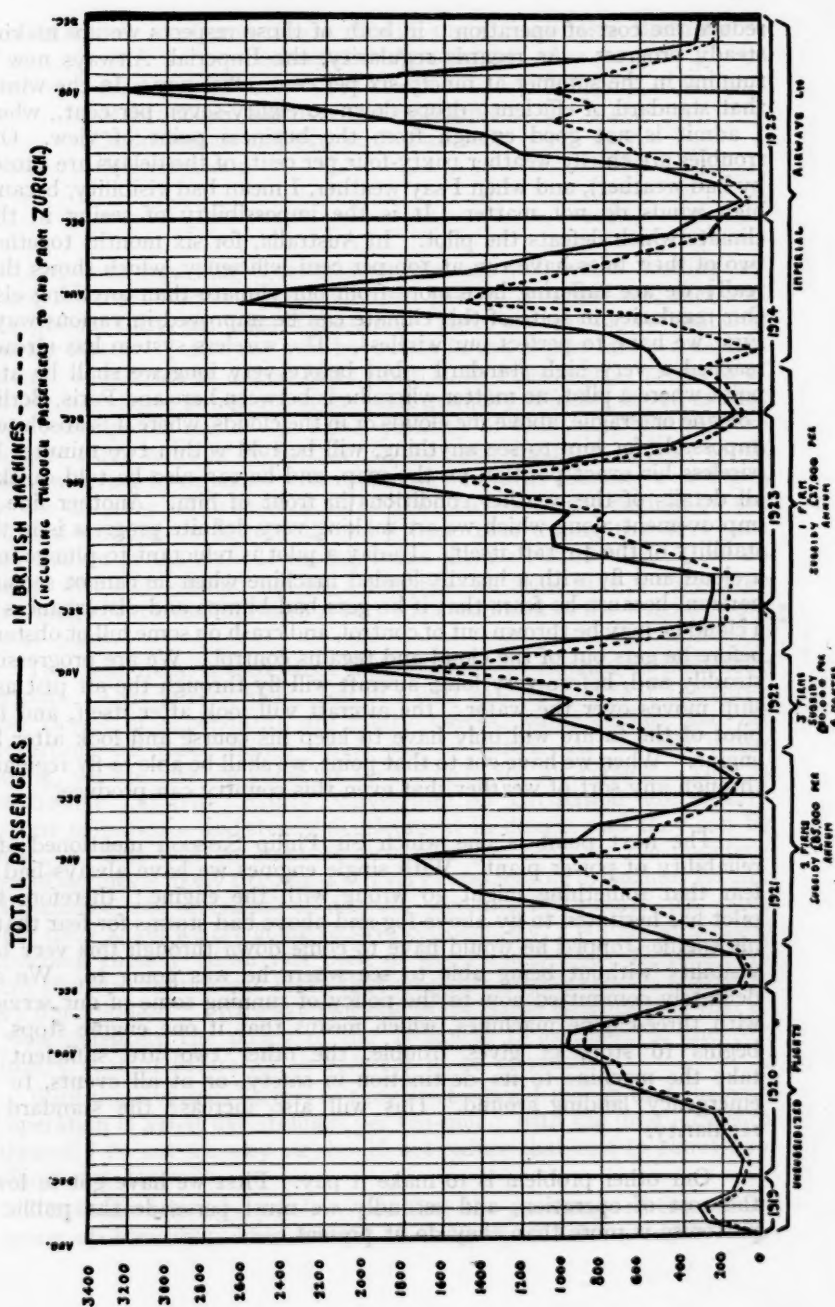
The next point on which I think we can claim a very high standard is safety. Air transport is usually looked upon as dangerous. Well, here is the record of fatal accidents to passengers since 1919. There have been four fatal accidents, involving the death of thirteen passengers altogether. During that time over 62,000 passengers have been carried, and we have covered 4,400,000 miles, which is equivalent to 176 times round the equator.

Our most serious weakness is the failure to bring air transport on to a paying basis, and for that end two things are required. We must fly regularly and reliably, quite apart from safety, and we have got to

*See p. 327.

AIR TRAFFIC ON LONDON-PARIS ROUTE

Diagram 2.



reduce the cost of operation ; in both of those respects we are making steady progress. As regards regularity, the Imperial Airways now is running in the summer at ninety-six per cent. efficiency. In the winter that standard of efficiency drops down to eighty-seven per cent., which I admit is not good enough from the business point of view. Our troubles are chiefly weather (sixty-four per cent. of the delays are caused by bad weather), and when I say weather, I mean bad visibility, because high winds do not matter. It is the impossibility of seeing in this climate which defeats the pilot. In Australia, for six months together, two of their lines have run at 100 per cent. efficiency, which shows that really we are suffering here more from our climate than anything else. Our regularity in spite of this climate can be improved in various ways. First we have to perfect our wireless. The wireless system has already reached a very high standard ; but before very long we shall be at a point where a pilot, no matter where he is between here and Paris, Berlin, Cologne or Prague, above the clouds or in the clouds, where it is absolutely impossible for him to see anything, will be told within two minutes by wireless his exact position on the map, and he can also be told quickly all details of the weather conditions in front of him. Another line of improvement along which we are making very definite progress is in the stability of the aircraft itself. To-day a pilot is reluctant to plunge into a cloud and fly with a heavily-loaded machine when he cannot see any horizon, because he fears that if he gets bad bumps and disturbances in a cloud he may be thrown out of control, and crash on some hill or obstacle before he gets out of the cloud and regains control. We are progressing steadily and, before very long, aircraft will fly through the air just as a ship moves over the water ; the aircraft will look after itself, and the pilot of the future will only have to keep his course and look after his engine. When we have got to that point, we shall be able to fly regularly through any sort of weather that even this country can produce.

The next point is one which Sir Philip Sassoon mentioned—the reliability of power plant. With single engines we have always had to fear that something might go wrong with the engine ; therefore the pilot has hesitated to fly above fog and above bad storms for fear that if his engine stopped he would have to come down through this very bad visibility without being able to see where he was going to. We are definitely committed now to the policy of running some of our services with three-engine machines, which means that if one engine stops, or begins to stop, or gives trouble, the other two are sufficient to take the machine to its destination in safety, or at all events, to an emergency landing ground. This will also increase the standard of regularity.

Our other problem is to make it pay. First we have got to lower the cost of operation, and secondly we must persuade the public to patronise it more than they do at present.

ANALYSIS OF OPERATIONAL COSTS OF A STANDARD BRITISH COMMERCIAL AIRCRAFT.

Fuel and oil	30%
Maintenance and overhaul of engines ..	44%
Maintenance and overhaul of aircraft ..	20%
Miscellaneous	6%
	<hr/>
	100%

Our data regarding costs of operation are well worth looking at. Those are the items of operating costs to-day. As you see, fuel and oil represent thirty per cent. of the total. There are two ways of reducing this big factor. I dare say you have seen in the papers lately a certain amount of talk about doped fuel; that is, in other words, methods of getting more horse-power out of the same quantity of fuel. If you can get more horse-power out of the same quantity of fuel, naturally you are going to carry more or go further for the same quantity of fuel, which means a saving in expense. The other way towards effecting a saving is the use of heavy oil instead of petrol; we have now got engines on the test bed running on heavy oil, and I hope that during the next year they will be in the air. If we can make them a success—and I see no reason why they should not be a success—we shall save a very large percentage of the fuel bill with a very little addition in the weight of the power plant.

The next item, maintenance and overhaul of engines, is forty-four per cent. That is very high; but of that I can tell you that the three chief causes of expenditure are faulty valves, water cooling and oil circulation—all three things which can be cured. As for the water cooling, we are already going in very largely for air cooling. That is one trouble cut out. Faulty valves and oil circulation are merely matters of patience and steady development in design, and they can be cured; so that that big item of forty-four per cent. on the maintenance of engines is likely to come down very considerably in the near future. Maintenance and overhaul of aircraft accounts for twenty per cent. Well, there again we are going to save considerably. We are at present depending entirely on aircraft built of wood and fabric. The employment of metal aircraft will mean that that cost of maintenance will drop very much indeed; I dare say you saw in the paper this morning that it is now definitely the policy of the Technical Department of the Air Ministry that in future all aircraft are to be of metal.

With these various factors as they are to-day, I reckon that the cost of operation is about five shillings per ton-mile; with the improvements indicated I do not see why we should not reduce that cost to about two shillings per ton-mile.

I have already tried to show you that the patronage of the public is going up steadily; when we get to the project I am going to talk

about directly—a real time-saving service such as that from Cairo to Karachi—the patronage of the public must be very much stronger than it is to the cross-Channel services, which do not effect anything like the saving of time contemplated in the Eastern routes.

Now I must say a word about Europe before we can go on to the Middle East. First, in Europe, there exists the International Commission of Air Navigation. It was created by the Peace Treaty. Twenty-two nations belong to it, amongst which are France, Italy, Japan, Belgium and ourselves. The International Commission recognises the sovereignty of the air belonging to each State; it also claims freedom of flight for all commercial machines of nations belonging to the Commission; it demands from those machines a certain common standard of safety, pilots' licences, and so on, and demands also that they should conform to certain regulations. Incidentally, Persia is a member of the International Commission of Air Navigation, which fact affects this Middle East route which we are coming to directly. Palestine, through being one of our mandatory powers, is also a member, whereas Egypt and Iraq are not members. Germany, Spain, and most of the northern countries of Europe—Sweden, Denmark, Norway and so on—have not yet joined the International Commission, but with them all we have special agreements permitting the flight of commercial aircraft. This International Commission meets twice a year in plenary session; there are also a good many meetings of "sous-commissions" in between these sessions, and on the work of these "sous-commissions" international law and international air administration is being built up.

There is another feature in Europe demanding attention, and that is what are called the "Nine Rules." The Treaty of Versailles laid down that Germany was not allowed to have any military aircraft. A sub-commission had then to decide what was a military aircraft. They laid down a certain standard of performance—speed, climb and lifting power—and said that any aircraft exceeding that standard was a military aircraft. These restrictions were embodied in the "Nine Rules," and were imposed on Germany, i.e., she is not allowed to have aircraft exceeding a certain performance, because, *ipso facto*, they become military if they do. Now, by the Treaty of Versailles, Germany was permitted to establish her sovereignty over her own air at the beginning of 1923. Thereupon, she very logically enforced these "Nine Rules," not only on her own aircraft, but on all other aircraft flying over Germany; she actually made laws to this effect, which meant that our aircraft which did not conform to the "Nine Rules" could not fly over Germany. There have been slight modifications to these rules since then, but Germany has not accepted them as being sufficient. The result is that to-day we, through a great many negotiations, have obtained permission to fly as far as Berlin and to Cologne, whereas France is not allowed to fly over Germany at all. The whole question is being further discussed in Paris at the present time.

Now I want to tell you about civil aviation activities in Europe. At present our activities do not extend as far as Berlin, but we were flying there in 1924. We now fly to Amsterdam, Cologne, Paris and Zurich. The French have several very important lines. One goes from Paris to London; another leads to Strasburg, Prague, Vienna, Belgrade and Bukarest, down to Constantinople, with a branch from Prague to Warsaw. They also have a service flying from Toulouse to Casablanca, and that has since been extended right down to Dakar. On account of these "Nine Rules," about which I was telling you, this Constantinople service has been held up, because the French aircraft could not fly across southern Germany, and were forced to go by Zurich and Innsbruck to Vienna. This is an extremely difficult country, over some of the worst mountains in Switzerland, and the service has been very severely handicapped and delayed by bad weather. They have also had trouble with the Turks, but I think that section is going on all right now.

Another service—Toulouse to Casablanca—has been an unqualified success. It has been used chiefly for mails, and this year has carried about 5,000,000 letters between France and French Morocco.

Germany has numerous internal services, and some external. There is a German-controlled service to Moscow; and the line running to the north through the Baltic States to Finland, although not under German control, is operated by German aircraft and German pilots. They also have services to Zurich and Vienna. That summarises the principal activities in Europe.

Broadly speaking, the French policy from the start has been Imperial. Their desire has been to maintain communications with their Colonies, Morocco in Africa, and Syria in Asia; and also, I think, she has had at the back of her mind the idea of establishing French influence at Prague, Warsaw, Belgrade, Bucharest, so that in case of trouble with Germany she would have aerodromes there; and in case of war with Russia she would have aerodromes *here*. The German policy has been dictated largely by a desire to sell aircraft, and also to extend their national influence. The Junkers Company had a wonderful programme, and managed to sell a great many aircraft, but I think that they have overstepped the mark; they have got to the bottom of their money, and are now being forced to amalgamate with another company. So far as we ourselves are concerned, up to date our policy has been to get commercial aviation on to a commercial basis as soon as possible without any regard to international politics or to any desire to sell machines; it is only now that we are starting on this new and really serious enterprise of Imperial communications.

All the nations have had to provide subsidies. Great Britain provides considerably less than anybody else. France gives a large sum, over £500,000, for only two and a quarter million miles annual flying. Germany gives about half what France does for rather less

flying. The German figures, however, are rather unreliable. If you turn to America, she spends more than either on her State Mail Service and, what is rather interesting, obtains less flying. This summary, however, may be misleading, because mileage is not everything. Its value depends on the size of the aircraft employed. 500,000 miles with big aircraft would, in cost, equal a million miles with aircraft of half the size.

Broadly speaking, then, the position in Europe to-day is that we appear to be well behind France and Germany in the scope of our operations, but I think we can claim the palm for general efficiency. We have had a little set-back lately through the change of administration, but it is righting itself now, and I think you will see a steady improvement in British aviation in the future. Of one thing I am perfectly certain; everybody considers that we are leading the world in efficiency, and many nations want us to come and operate in their countries; if we only had a little more money to spend you would see a tremendous boom in British aviation.

Now India has always been our first real objective in air transportation development. It is a country with a vast trade of every description. Its approaches do not offer the geographical and physical difficulties of the routes to Canada and South Africa, and it is also directly on the way to Singapore, Australia and New Zealand. Two committees in the past have recommended that the air route between England and India should be developed. In 1919 Lord Weir's Committee on Imperial Air Routes made a definite recommendation to this effect; without going into details, it was stated definitely that we ought to develop our route to India as soon as we could. In 1922 the Civil Aviation Advisory Board, under the chairmanship of Lord Gorell, considered the question in great detail; they eventually recommended that the Cairo-Bagdad section, which was then being operated by the Royal Air Force, should be commercialised, and that the section Bagdad-Karachi should be developed also on a commercial basis; they indicated that a five years' contract should be made with some company or companies to carry out these services. That was in 1922, and this recommendation is now actually being brought into force.

In March of 1921 an important conference was assembled, as you will all remember, at Cairo, by Mr. Winston Churchill, and the decision to make Iraq an Air Force Command was taken. At this conference it was also decided to establish a fortnightly air service between Cairo and Bagdad to be operated by the Royal Air Force.

This route runs from Heliopolis via Palestine and across the Syrian Desert to Bagdad. In July, 1921, the desert section was marked out by a car track, visible from the air, landing grounds were prepared at intervals of about every twenty miles, and intermediate aerodromes were arranged at Ramleh, Amman and Ramadi. The service has been

running ever since, and it has flown very regularly. It has been extraordinarily free from accidents, and I think I am right in saying that whilst running in connection with the P. & O. in Egypt, it has only missed its connection once in the whole four years of its existence. It has been operated under purely military conditions, and no effort has been made at all to bring it down to commercial conditions. It has been looked upon as a quick means of communication for official purposes between Iraq and Egypt, and also as an excellent means of training pilots and crews. Military conditions did not suit the Postmaster-General in Iraq, and so he definitely encouraged the Nairn motor-car service to start. You have all heard of that. It used to run from Beirut to Damascus and Bagdad, but now, owing to trouble in French Syria, it has transferred its operations to Jaffa or Jerusalem, and then via Amman on to Bagdad. In 1923, ten tons of mails were carried by the Royal Air Force air service, but when the motor-car route started in 1924, this dropped to 5.7 tons. The motor-car transport, through being a weekly service, had taken the traffic away from the fortnightly air service. That state of affairs exists to-day.

Since the Civil Aviation Advisory Board's report, the question of the route to India has been constantly under consideration, but nothing practical has been done because there has been no money available. Investigation has shown that there are several alternative routes. The shortest route from this country would be by Berlin-Warsaw, across the south of Russia, Baku, Teheran to Quetta on to Peshawar; but that had certain serious drawbacks. To start with, Russia was almost impossible. The Germans have tried flying from Moscow to Baku, and they have given it up as hopeless, because they could get nothing sensible out of the Russian officials at all. Then the section including the Elburz Mountains and the Hindu Kush is very difficult. So that, although that route in mileage is actually the shortest route, it is probably the least practicable from a commercial point of view. Then to the South, naturally, a route along the Persian Gulf from Syria presents itself, and there are two or three ways of getting to Syria. One way would be via Cologne, Prague, Budapest, Bucharest, Constantinople and across Anatolia and so to Bagdad, and thence along the Persian Gulf. Another way would be to establish a seaplane service from Marseilles via Brindisi and Athens round to Alexandretta, and then on to Bagdad; and yet another would be to strike across the Mediterranean, as Cobham did recently, from Athens to Crete and on to Cairo. These three possibilities offer themselves. Well, the northern route through Berlin is defeated by the "Nine Rules" and the trouble with Germany which I have already mentioned; the southern route would involve using seaplanes or flying boats from Marseilles along the shore of the Mediterranean, and that would mean an increase of cost of 100 ton-mile. Both, therefore, have serious objections; so we have arrived at the conclusion that in Europe there are too many physical and international

difficulties for the present, and that it will pay us to leave the Continent to work out its own salvation while we build up our Imperial communications outside.

Once we accept this conclusion, naturally Egypt presents itself as the best locality from which to operate, because, as you all know, there are two very reliable and punctual steamship services every week—the P. & O. to Port Said in seven or eight days, and the Lloyd-Tristino to Alexandria in six or seven days from London, each of them carrying mails and passengers. I admit that this is slow, but they provide a good reliable base on which to begin operations. In Egypt we had the choice of Cairo, Ismailia, Port Said, Kantara—all possible starting places—and eventually it has been decided that Heliopolis, near Cairo, is the best locality from all points of view; and that is the place from which it is intended this service shall start.

Now during 1924 matters began to ripen. To start with, the German Junker Company arrived in Teheran; they opened negotiations with the Persian Government for what almost amounted to a monopoly of all air services within Persia, and they also made it clear that they wanted to establish a route between Teheran and Europe. That rather put us on our mettle, and from the last Government I obtained leave to expend £600 on a journey by air from this country to India with a view to looking into the general situation on the spot. This flight I was lucky enough to carry out with Cobham last winter. We covered about 18,000 miles in just over 200 hours flying-time without change of crew, engine or aircraft.

We went out by the northern route¹—Cologne, Berlin, Warsaw, Bucharest and Constantinople (we had, of course, to get special permission from Germany to fly over part of the route). Then we flew across Anatolia to Konia, Alexandretta and Aleppo, thence along the Euphrates to Bagdad, down the Persian Gulf and so, across India, to Rangoon. We came back with small deviations to Bagdad, and then, instead of coming up to Aleppo we went straight across the desert to Beirut; having reached Constantinople, we took the southern route, via Belgrade, Vienna, Prague, Strasburg, in order to compare the latter with the northern route.

To take the northern section route in Europe first; this is extremely easy. It is flat country the whole way; you scarcely meet anything you could call a hill. The highest point of it is somewhere about Lemberg, which is a very gentle slope up, and rises to about 1,000 feet. It is the easiest route in the winter, except for a certain amount of fog.

The central route involves crossing the Carpathians, the Böhmerwald and the Black Forest, all of which are rather serious obstacles in snow and bad weather. Going East, Anatolia generally is a comparatively

¹ See Map 1, facing p. 340.

easy section. There is a bit of mountainous country just east of Constantinople, and, of course, the Taurus, which runs across it to the south, is rather a stiff proposition. From the Taurus onwards it is a perfectly easy route as far as Basra. The Persian Gulf is quite simple from the flying point of view, but it has the serious drawback that practically no communications exist; consequently a forced landing in a spot from which it would be impossible to take off must involve great delay and expense in salvage. That is the real difficulty of the Persian Gulf. The chief difficulty in Iraq is the prevalence of mud during the winter. In December and January a good many of the aerodromes go out of action altogether after heavy rain; also during the summer there are dust storms, which are very difficult and unpleasant things to fly through. But, generally speaking, the whole of this route is an easy one, and most of it offers a very much lighter task than that which our pilots are doing every day between London and Berlin, London and Cologne, and London and Paris.

Now just before I started on this trip, the present Government came into power, and Sir Samuel Hoare came back to us as Secretary of State. The moment he got back he decided to push on this project of an air service to India; he opened negotiations with Imperial Airways at once, and also decided to visit Iraq himself. I got home in March of 1925—and I was delighted to find that he had determined to establish an air service between Egypt and India if it was humanly possible. With Mr. Amery, as you know, he went to Iraq. He flew over from Egypt, he flew all around Iraq, and he returned to the base with the conviction that money could actually be saved by instituting a commercial air service. For normal military purposes one squadron, then maintained in Iraq, could be dispensed with, if the Air Force was relieved of the responsibility of operating the route between Cairo and Bagdad once a fortnight. Consequently, during the summer of 1925 we conducted various negotiations; first with that really difficult brick wall, the Treasury; and after that, with Imperial Airways and certain other people whom we hoped might take an interest in the project. The result was that by August the Treasury had agreed to the expenditure of a sum of £100,000 a year for five years to establish this service, on the understanding that there would be a reduction of one squadron in Iraq; and we decided on certain heads of an agreement with Imperial Airways. No other serious competitors for the service presented themselves.

This original agreement was for a weekly service between Cairo and Karachi, two-engined machines being used on the route as far as Bagdad; and single-engined machines to go on to Karachi and to carry mails only in the initial stages. During September I took two Imperial Airways representatives over the route to decide whether these heads of agreement were really practicable, and to study the details of cost on the ground; incidentally, also, I had the task of negotiating with the various Governments concerned—Egypt, Palestine, Iraq and Persia.

Egypt and Palestine were, of course, more or less under our control. Iraq is a little more independent, and Persia, of course, is absolutely free. Wherever I went I met a very keen understanding and appreciation of aviation, and every sort of desire to help. There was no obstruction and no trouble anywhere. Egypt expressed her readiness to establish an air port. Palestine said they would provide land for any port of call we needed ; this will be at Gaza. The Government also promised that if they got the money to develop the Port of Haifa in the future, they would see that Haifa had full air facilities, both with marine aircraft and aeroplanes. Iraq are providing a refuelling station with a police post at Rutbah Wells in the desert ; this is an important concession, because Rutbah is the only place on the Azrak-Ramadi section where there is always water. Persia has agreed to let us establish all the necessary aerodromes along the Persian Gulf. She has agreed to protect them for us, which is an important thing in that part of the country, and she is prepared to take over on payment any wireless organization we establish there. The Persian Government is keenly interested in the project. Persia is a member of the International Commission of Air Navigation, and her officials have evidently studied the problem very carefully ; they were anxious to conform with the regulations in every way, and to take the responsibility on their own shoulders. Their only trouble, like most other people, was finance, and they hoped we would help them by providing the ground organization at our expense, and so enabling them to meet their responsibilities. I did not negotiate with India myself, but I understand that India is prepared to provide the necessary facilities at Karachi which will be our Eastern base, and also to make whatever other arrangements should be necessary between Karachi and the Persian Frontier.

The Imperial Airways representatives, after seeing the Persian Gulf, decided that they could not face the financial risk of running single-engined or two-engined machines down this section of the route ; if they *did* have a forced landing in a difficult bit of country it would cost a great deal of money to save the passengers and cargo and the aeroplane itself. After a good deal of discussion, they came to the conclusion that they must employ three-engined machines, and so eliminate any chance of a forced landing on the Persian Gulf. As a result, we have agreed that they shall use three-engined machines, but the use of three-engined machines involves a larger amount of capital, and higher operating costs. Eventually, the three-engined machine promises to be a better commercial proposition than the smaller one, but in the early stages it required a bigger subsidy. We were limited by the Treasury to £100,000 a year ; so, instead of demanding a weekly service, we have been forced to start with only a fortnightly service, because we have not the money to do more. Personally, I have no doubt, however, that if we can establish a fortnightly service flying regularly and efficiently along this route, commercial interests will demand a weekly service ;

and I also believe that there will be so much traffic that the company will soon be justified in running a bi-weekly service—that is, services in connection both with the P. & O. and with the Lloyd-Tristino every week.

We are giving the company £93,600 a year as a subsidy; the Air Ministry is going to spend £6,400 a year on the creation and maintenance of the route; that is a total of £32,000 in five years ground organization, which is not so bad considering that we have to provide a number of wireless stations and sheds, establish certain aerodromes which do not exist, and keep a small staff to administer the route, and represent the Air Ministry on the spot.

The route generally is an easy one.¹ The section between Cairo and Basra is well known, because the Air Force have been operating along it for the last four years. The stopping places will be Gaza, Ziza (near Amman), Rutbah Wells and Bagdad. After Basra, the halts will be at Bushire, Bandar Abbas and Chahbar. In the early stages of development the journey will probably take four days, two days to Basra and two days on; but night flying will, I hope, be undertaken before very long, and before our five years are up, we should have reduced the journey to thirty hours from Heliopolis to Karachi. If we can do that we shall be saving seven or eight days to Karachi and Northern India, which ought to be well worth while.

When this service is well established, there will be great possibilities for the future. India, I think, will continue the route across from Karachi to Calcutta. From Calcutta to Rangoon is another very important link which I have flown over, and which is a comparatively easy proposition for flying boats. Next comes Rangoon to Singapore, which is an important Imperial link, and which will be an Imperial responsibility when India has done her duty and taken the service as far as Rangoon; from Singapore, it is not so far to Australia. Australia is ready and waiting for us. She has done great things in air transport, and there is a service flying weekly between Perth and Wyndham, which can be extended to Port Darwin and along the Dutch East Indies.

Speaking of Singapore, I must just mention here the possibilities of airships. The present airship programme covers the construction of two really big airships to run an experimental service to Karachi. This may sound as if we were going to run them in competition with the aeroplanes; actually Karachi has been selected, not for commercial reasons, but because it is the best possible base from the weather point of view; and we want to give the airship every chance in the experimental stages. Karachi will always be a most useful airship port for overhaul and repair, and possibly even for construction in the future. I think, personally, that if we can establish the experimental airship service, and prove it a success, the airships in future will call at Bombay or

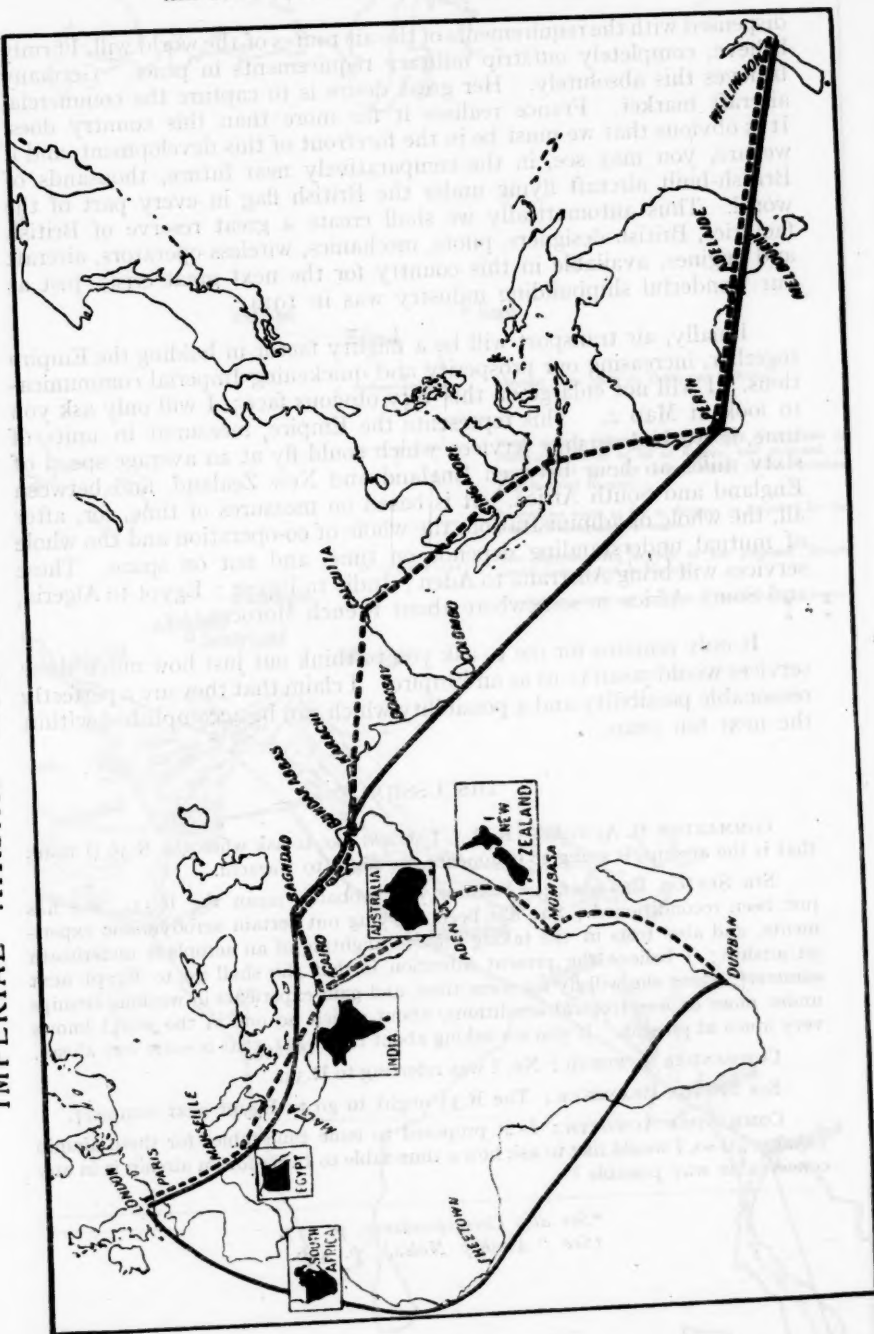
¹ See Map 1, facing p. 340.

possibly at Colombo *en route* for Australia, and not at Karachi. They will fly in co-operation with the aeroplane. I can imagine them touching at Heliopolis to feed the aeroplane service now being established, and again at Colombo to feed the Indian aeroplane services of the future, which will be flying up to Delhi, Calcutta, and so on.

I must strain your patience for a few more minutes, and will sum up the advantages which will accrue to the Empire if we develop air transport generously and efficiently. First, certain strategic advantages will accrue. Established air routes will give the air forces of the Empire a mobility which they do not possess to-day. The Air Force is arriving at a somewhat analogous position to that of the Navy in relation to this country. Our great power in the past has been due to the fact that the Navy has had the command of the sea, and has been able to go wherever it liked so long as it had bases at which to re-fuel and carry out repairs. We must see to it that the Royal Air Force has the same sort of facilities, and the simplest way of doing this is to establish commercial air routes throughout the Empire. It is also becoming within the bounds of possibility, not only to move aircraft between different parts of the Empire, but also to move troops by air. In 1923, 300 Indian infantry, with all their kit, a certain amount of rations, Lewis guns, and 30,000 rounds of ammunition, were carried inside of two days over seventy miles of extremely difficult country by nine comparatively small aeroplanes. That makes one think a bit, because those aeroplanes could have flown just as easily over 250 miles; and with more aircraft that job could have been done in a couple of hours instead of two days. So it is possible to visualise the time when troops will be transported in emergency by air from one part of the Empire to another. Air transport organisations will also provide facilities which should be of great value for local operations on mobilisation. You will remember that in 1915 the "Emden" was sailing freely over the Indian seas. She sank a number of ships in the Bay of Bengal, and for a time lay off the mouth of Hughli, completely paralyzing the Calcutta shipping traffic. Now if we had had four or five powerful commercial aircraft flying between Calcutta and Rangoon, on mobilisation they could have easily been formed into an auxiliary unit, and armed with torpedoes or bombs, they would have made it perfectly impossible for the "Emden" to do what she did.

The second Imperial asset provided by air transport will be its support of our aircraft industry; personally, I venture to say that our aircraft industry will be at least as important to us in the future as our shipping industry has been in the past. As air transport becomes a more commercial proposition than it is to-day, it will grow steadily and continuously, and when eventually it can operate without artificial financial assistance, it will expand rapidly and vigorously. Every country in the world is calling out for air transport, and its activities are only limited to-day by the fact that aircraft operations must be supported by some form of subsidy. When these subsidies can be

IMPERIAL AIRSHIP ROUTES OF THE FUTURE



dispensed with the requirements of the air routes of the world will, I firmly believe, completely outstrip military requirements in peace. Germany believes this absolutely. Her great desire is to capture the commercial aircraft market. France realises it far more than this country does. It is obvious that we must be in the forefront of this development, and if we are, you may see, in the comparatively near future, thousands of British-built aircraft flying under the British flag in every part of the world. Thus automatically we shall create a great reserve of British factories, British designers, pilots, mechanics, wireless operators, aircraft and engines, available in this country for the next great crisis, just as our wonderful shipbuilding industry was in 1914.

Finally, air transport will be a mighty factor in holding the Empire together, increasing our prosperity and quickening Imperial communications. I will not enlarge on this very obvious fact; I will only ask you to look at Map 2. This represents the Empire, measured in units of time, if we had airship services which could fly at an average speed of sixty miles an hour between England and New Zealand, and between England and South Africa. It is based on measures of time, for, after all, the whole of administration, the whole of co-operation and the whole of mutual understanding depends on time, and not on space. These services will bring Australia to Aden; India to Egypt; Egypt to Algeria, and South Africa to somewhere about French Morocco.

It only remains for me to ask you to think out just how much these services would mean to us as an Empire. I claim that they are a perfectly reasonable possibility and a possibility which can be accomplished within the next ten years.

DISCUSSION.*

COMMANDER B. ACWORTH, R.N.: I should like to ask when the R.36 (I think that is the airship) is going to commence her flight to Karachi.

SIR SEFTON BRANCKER: I think you probably mean the R.33. She has just been reconditioned. She has been carrying out certain aerodynamic experiments, and also tests in the taking off and alighting of an aeroplane underneath an airship; I believe the present intention is that she shall go to Egypt next summer†, where she will fly for some time, and gain experience in working airships under more or less tropical conditions, about which no one in the world knows very much at present. If you are asking about the R.101, that is some way ahead.

COMMANDER ACWORTH: No, I was referring to R.33.

SIR SEFTON BRANCKER: The R.33 ought to go to Egypt next summer†.

COMMANDER ACWORTH: Is it proposed to issue time-tables for these airship voyages; if so, I would like to ask how a time-table to India for an airship is in any conceivable way possible?

*See also *Correspondence*, p. 377.

†See "Airship Notes," p. 426.

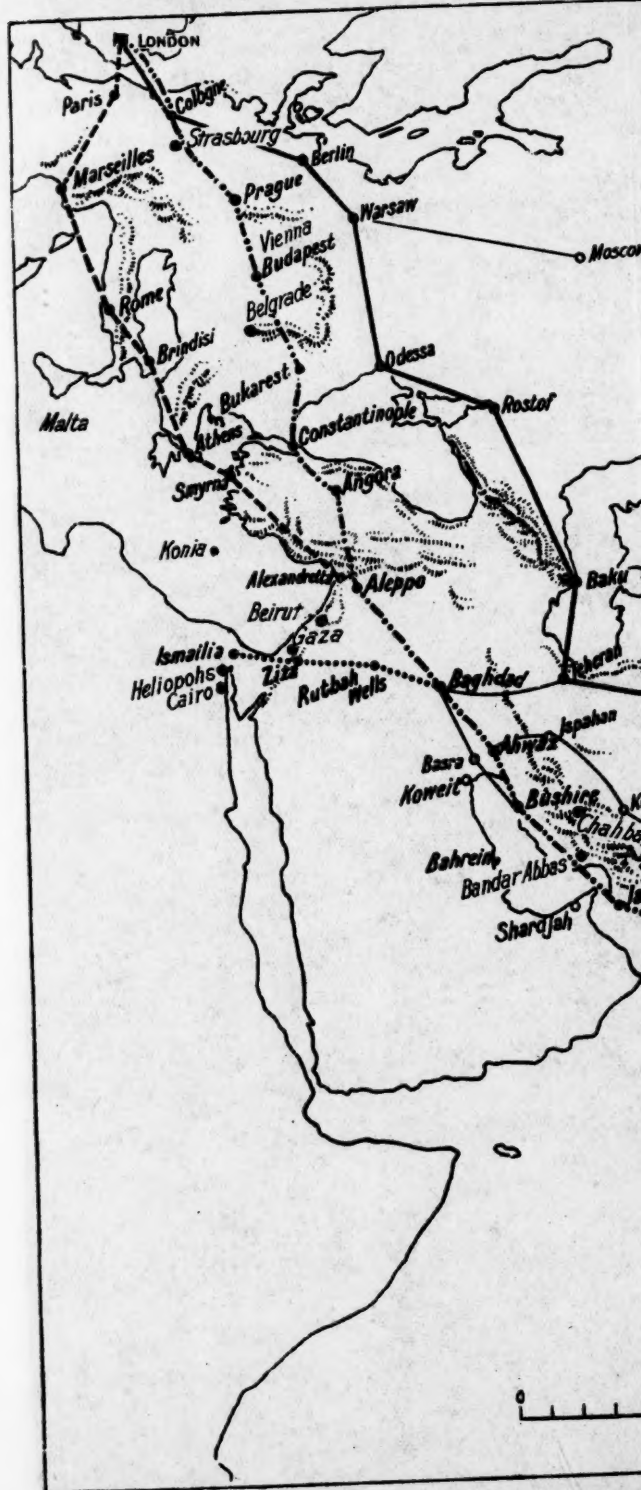
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INVENTING VIRGINIA BOTTLES OF THE FUTURE

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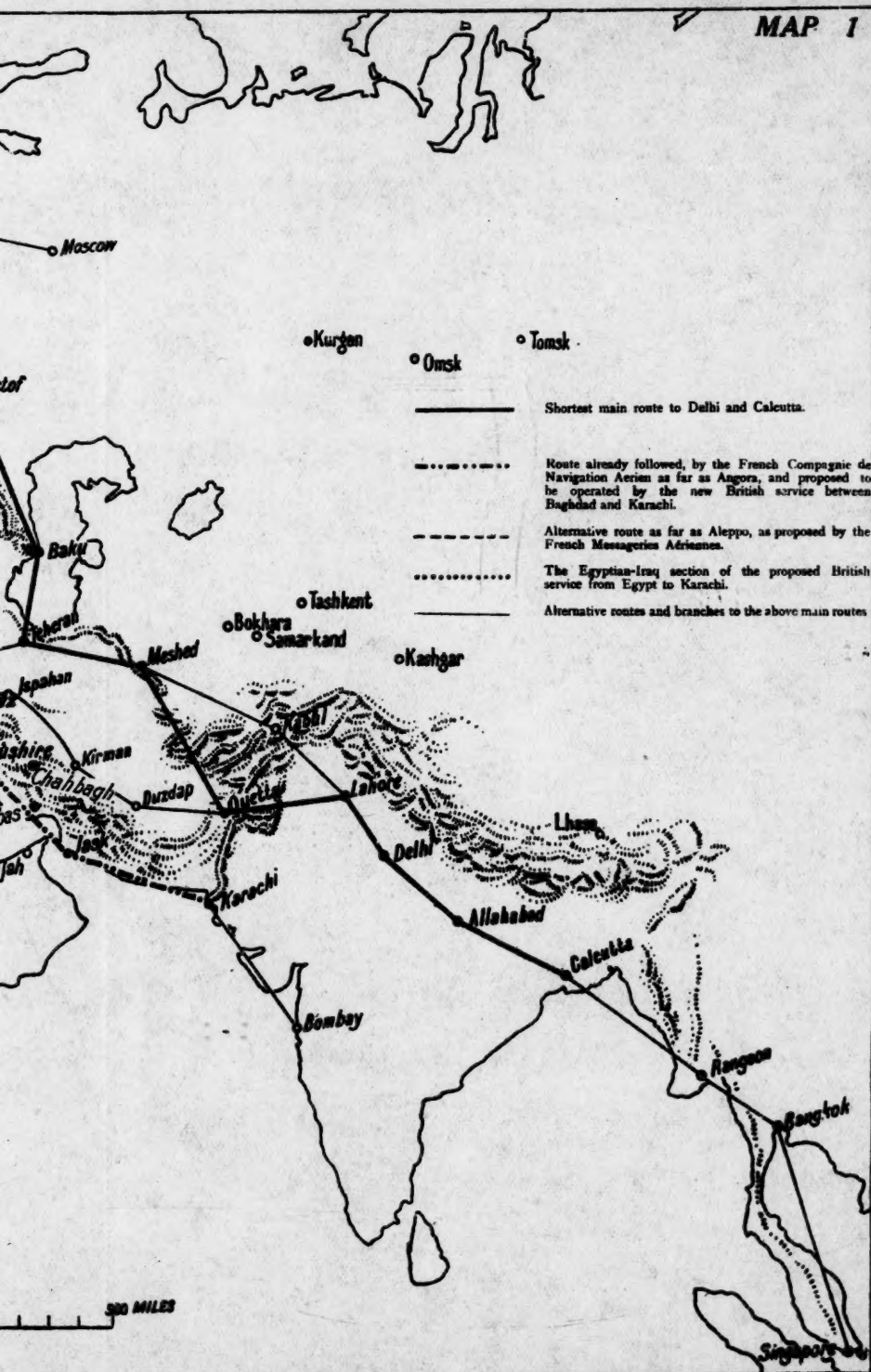
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PROBABLE AIR R



R ROUTES TO THE EAST

MAP 1



SIR SEFTON BRANCKER: I think I can only answer that by the good old saying, "Wait and see!" The new airships have a cruising speed of sixty-five miles an hour, and they have a fuel capacity for remaining in the air for perhaps five or six days. The Meteorological Department is considering the problem very carefully. In the early stages I think a meteorologist will actually be carried on board. We shall have wireless communication with a great many meteorological stations, and we are convinced that an experienced airship captain will usually be able to take his airship into areas in which he will have a favourable wind, and in all events he will be able to avoid any very serious head wind. We cannot say how far we are going to run regularly to a time-table until we have been operating for three or four years. The only thing I will guarantee is that the airship will go at least three times as fast as any sea-borne ship, so though we may be a day late at Karachi or Bombay, or Colombo, we shall be beating any other form of transport that exists.

COMMANDER ACWORTH: But if sixty miles an hour is the airship's speed, and it is operating in a constantly moving medium, it might arrive several days too early, or, on the other hand, it might not arrive at all.

SIR SEFTON BRANCKER: I do not think there are any meteorological conditions that will stop an airship with a cruising speed of sixty-five miles an hour. In a strong, favourable wind we can shut off the engines and drift with the wind. Meteorological conditions have been studied very carefully, and high winds are rare except in certain small areas; we reckon that we can avoid those areas unless the wind is favourable, and then we will go into those areas deliberately; it is quite possible that in the airship service to India we shall fly along quite different courses at different times of the year, just as sailing ships used to do in the old days. It is obvious that during the monsoon season, the way to go out to India would not be the way to come back. For instance, during the monsoon, the winds in the Persian Gulf are comparatively light, and the south-westerly conditions can be avoided.

COMMANDER ACWORTH: Of course, sir, it must be understood that what is wind to objects on sea or land is a current to aircraft afloat in the air, and that is the trouble. There is really no analogy between sailing ships and airships for the latter operate in one medium only and to them wind is a current. Apart from all other considerations, to revert to dependence on the wind appears to be retrograde.

SIR SEFTON BRANCKER: We hope that the wind is going to be to our advantage. However, as I said before, it is a case of "Wait and see." No one can lay down anything definite about this on theory. We must get into the air and try it out; and, personally, I am an optimist. There are pessimists, I know.

COMMANDER ACWORTH: There is this point, a thirty-knot adverse air current, which is a very slight one, blowing for twenty-four hours only (the remainder of the voyage taking place in still air), is equivalent to 720 miles of the airship's scheduled distance.

A MEMBER: If you put your nose into the thirty-knot current.

COMMANDER ACWORTH: But you are in it, though you may well be unaware of it.

SIR SEFTON BRANCKER: We have got a little beyond being *in* it. The meteorological forecasts are so good now that we need not be *in* it. We can take a course where the weather is favourable.

COMMANDER ACWORTH: But depressions may be 1,000 miles across.

SIR SEFTON BRANCKER: On one or other side of the depression, the wind will favour you, because the wind is in one direction on one side, and in the opposite direction on the other.

COMMANDER ACWORTH: By the time you have sailed 1,000 miles across it you have experienced the full force of the current in the wrong direction while you are getting across it. That may mean about 1,000 miles leeway.

SIR SEFTON BRANCKER: I think that you are what I should call a pessimist. As I have said, you must wait and see. It is no good trying to prove anything on paper.

THE CHAIRMAN:

Ladies and gentlemen, I should like you to pass a hearty vote of thanks to Sir Sefton Brancker for having come here to talk to us this afternoon. He has had to compress into the short time at our disposal a very big subject, but I think that you will all agree that it has been a most interesting afternoon, and I am sure that you will join with me in thanking him very heartily for having come here.

The vote of thanks was carried with acclamation.

GENERAL SIR EDMUND BARROW, on behalf of the Council, thanked the Chairman for his services.

The meeting then terminated.

THE IRAQ ARMY

By BREV. LIEUT.-COLONEL R. H. BEADON, C.B.E., R.A.S.C., p.s.c.

AS a political experiment the setting up of an Arab state must commend itself as of interest to all who take note of Eastern affairs. Yet it is not only in the purely political sense that the experiment is interesting. The military aspect of the process of bringing forth a new nation is one that merits more than the passing attention of soldiers.

Great Britain was peculiarly fortunate in her selection of the men who were to reconstruct the Egyptian Army after Tel-el-Kebir, as the names of Sir Evelyn Wood, Lord Grenfell and Lord Kitchener attest, and it may well be believed that the experience there obtained stood each of them in very good stead in their subsequent rise to the highest rank in the military hierarchy. The constructive work that began in Egypt in the early eighties could, indeed, scarcely fail to leave its mark on all concerned in it. But it is not as a school for future Field Marshals that the creation of the Egyptian Army may be recalled as a precedent for the conditions that obtain in Iraq to-day. It is rather on account of the similarity of the circumstances in general. Both Egypt and Iraq are ex-provinces of the Turkish Empire redeemed by Great Britain. In neither case was there any marked sense of national unity. Nor were the elements composing the nation in either case homogeneous. Both lacked the steadying influence of a middle class—there was little between the effendis and a mass of the comparatively backward population of Egypt.

The definite successes achieved by British administration in Egypt presage the hope and belief that similar results may be obtained in Iraq. And at least from one point of view, and that is the military, such expectations should be anything but extravagant. The people of Iraq, consisting as they do for the larger part of settled or semi-settled Arab tribes, are of tougher stock than the inhabitants of the basin of the Nile, for they have always enjoyed a larger measure of independence, while their livelihood has, too, been hard to obtain. As the raw material of an army they are, then, very much more promising than the fellaheen, and certainly little, if at all, inferior to the warlike races of the Sudan.

Admittedly the fashioning of an army in a scientific age is a vastly more complicated process than it was forty years ago. But the Iraq

Arab, though deficient in education as judged by Western ideas, is quick and intelligent, and up to a point absorbs new ideas readily. His aptitude for anything mechanical is especially marked.

While valuable precedents can be drawn from the instance of Egypt, it will serve no good use to push the comparison too far. If an army were merely to consist of an agglomeration of military formations without any clear cut or definite *raison d'être*, its construction would be a simple enough matter. Its upbringing and education cannot, however, be conducted in so haphazard a manner. There must be some coherent idea underlying its purpose and life. And it is as regards this very purpose that the Iraq Army of to-day parts company with its Egyptian predecessor. For the latter the internal security rôle has always predominated. The conquest of the Sudan cannot be considered as other than an elaborated form of that rôle, and, after that conquest had been achieved at Omdurman, Egyptian and Sudanese troops found full justification for their existence in the unruly nature of the tribes within and adjacent to their boundaries. With the exception of the frontier contiguous with Turkey, on the Suez Canal, there was no external Power which could seriously threaten the borders of Egypt by land. The Great War showed that any attempt from that direction is attended by very great difficulties to the invader. The desert wastes of Sinai are, in fact, a far surer protection than an army.

No such circumstances attend the situation of Iraq. She has naturally her internal security problems which lie in the disturbed state of Southern Kurdistan and the unruly nature of certain of the tribes in the Middle Euphrates. But she has also powerful external neighbours who have comparatively easy access to her territory and with the most important of all, her relations have for long been strained. The protection afforded from British Imperial sources cannot be continued indefinitely, and, indeed, has ever since the Armistice been subject to constant reduction.

If, then, Iraq is ever to stand on her own legs at all, her Army will be confronted with no mere glorified gendarmerie duties, but with military problems of real magnitude. It is of cardinal importance to emphasize this in the measures taken for the building up of her military forces.

After the collapse of the rebellion of 1920, and with the inauguration of the new policy of self-government, steps were taken in 1921 to construct a national army. For this purpose a limited number of British officers—these in the first instance were only three—were attached to the newly-born Ministry of Defence. The senior of these officers had passed a great deal of his service in the Egyptian Army, and had accompanied the Arab forces throughout the Hedjaz Campaign. The remainder were selected for their knowledge of Mesopotamia and the Arabic language. Thus from the modest foundation of three Staff officers

at defence headquarters, and a number that subsequently averaged about one dozen outside supervising the formation of units, was created the "Arab" or, more strictly speaking, the "Iraq" Army.

Following the visits of the Secretaries of State for the Dominions and for Air in March last year, a more forward policy was inaugurated which was to entail pushing forward the training and expansion as rapidly as possible. For this purpose, a Major-General with a further twenty-seven British officers were sent from England at the end of 1925, and the advent of these may be said to mark the commencement of the second stage in the development of the Iraq Army.

It is, then, convenient to set out the results of the first five years' work during which the foundations have been well and truly laid. The fact that no official manual on the subject exists furnishes, perhaps, the best excuse for so doing.

To-day the composition of the Army is as follows:—

- Royal Bodyguard,
- 3 Regiments of Cavalry,
- 4 Batteries of Artillery,
- 6 Battalions of Infantry,
- 1 Frontier Company (Infantry),
- 3 Transport Companies,

with a small proportion of Military Police, Medical, Ordnance and Veterinary services—the total strength being some 8,700 all ranks. The training and organization follows British lines throughout.

HIGHER ORGANIZATION.

H.M. King Faisal is, by virtue of his office, Commander-in-Chief and the Army is controlled by the Minister of Defence. There is also a Deputy Commander-in-Chief who, located at the Ministry of Defence, exercises in practice the chief executive power.

There is no organization higher than that of the unit, but for administrative purposes the country is divided into three districts:—

- Northern, with headquarters at Mosul;
- Southern, with headquarters at Baghdad;
- Eastern, with headquarters at Sulaimaniyah.

EDUCATIONAL ESTABLISHMENTS.

These consist of the

- Royal Military College,
- Training Centre, and
- Cavalry School,

all being situated at Baghdad. The first of the above was initiated in June, 1924, when fifty cadets joined for a course of three years' training, and a further similar number entered in 1925. The progress made by

the cadets has been promising beyond all expectations, and it is confidently believed that in 1927, when the first batch pass out and receive their commissions, the influence of their very careful training will be quickly felt throughout the Army. The Military College has become very popular, and the number of the candidates considerably exceeds the vacancies available. Consequently, a very nice discrimination has to be shown in selection, which, as far as practicable, endeavours to hold the balance between youths coming from the secondary schools in the large towns and the sons of sheikhs coming straight from their tribes in the desert.

The course is conducted, as closely as possible, on the lines of Sandhurst where two vacancies are made yearly for Iraq Army cadets.

The Training Centre consists of an organization that provides courses for both officers and N.C.O.'s in Musketry, Bayonet Fighting, Bombing, Lewis, Hotchkiss and Vickers Guns, and also signalling. There is also a senior officers' tactical course lasting two months, and a junior commanders' course of four months.

The Cavalry School follows the normal lines for such institutions, and an officers' course of seven months is continually in progress. It is compulsory for every cavalry officer to go through this course. At the end of each secession a staff ride of twenty days takes place. Similar courses are also held for N.C.O's., but the duration at present is only four months.

The subjects taught are :—

1. Equitation and Horse-mastership ;
2. Remount training ;
3. Lance and Sword ;
4. Topography ;
5. Minor tactics (up to a squadron) ;
6. Drill.

The Iraq Officer Commanding the Cavalry School has been trained at Saugor in India.

OFFICERS.

The bulk of the present Iraq Army commissioned ranks have been, as might be expected, Turkish officers who were, on the inauguration of the Iraq National Government, taken into employment as being Iraq subjects. These Arab officers of the Turkish Army possessed between them a good deal of military experience of a varied nature, even though that experience conflicted at times with the principles that are now being inculcated on British lines. A proportion, and among them the most prominent, broke with Turkey in the course of the War, and fought with the Arab Army in the Hedjaz ; others remained Ottoman officers up to, in some cases, the victorious campaign of Mustapha Kemal in Asia Minor. Like every other collection of professional men, there

were among them some good, some bad, and some indifferent. Very drastic steps have been taken to eradicate the inefficient and encourage those showing promise. Among the latter it has been possible to arrange for a series of attachments from six months to a year to British units at home, and the benefits derived from these attachments have been very marked.

RECRUITING AND TERMS OF SERVICE.

The Army is recruited on the voluntary system, and no difficulty is experienced in getting suitable recruits. Service is popular because it is well paid—the private soldier has twenty-seven rupees per month and rations are on a generous scale.

The terms of service are, for Cavalry two years and four months, and for Infantry, Artillery and other arms two years and three months, the odd periods being the times spent at the depôts. The class of recruit has been steadily improving, and the men show great interest in their work. From very early days, it was aimed at getting a high proportion of tribesmen as against the town-dwelling population, and at the time of writing over sixty per cent. of the rank and file fall within the former category.

CAVALRY.

The Royal Bodyguard consists of one squadron only, the men being specially picked from those of good physique at the Cavalry Depôt. It was formed in 1921, being the first cavalry unit raised. The Bodyguard is located permanently at Baghdad, where it does duty as royal escorts and guards, but it is moved out to camp for training purposes. Its horses consist at present of old Australian animals left behind from the British occupation of Mesopotamia.

The 1st Cavalry Regiment was raised at Baghdad in the autumn of 1921, and saw a little active service at Anah, on the Euphrates, the following year. It is now located at Mosul.

The 2nd Lancers were raised at Mosul in 1922 by drafts from the 1st Cavalry and recruits from Mosul, and have been singularly unfortunate in their opportunities for training, having been almost permanently on the move in connection with internal security duties. They are now stationed at Sulaimaniyah, in Kurdistan.

The 3rd Cavalry Regiment was likewise raised at Mosul in 1922, the officers being practically all obtained from the infantry. The regiment did very well in the course of the operations in Kurdistan in 1925, when it was consistently well reported on. It is now at Baghdad, having been selected as the "Exemplar" regiment (*i.e.*, regiment having a cadre of British officers), and may be expected to make very considerable progress in the future.

The Cavalry Depôt at Baghdad came into existence in April, 1925, and takes in all cavalry recruits for a six months' course. It turns out about a troop a month.

A Remount Depôt was formed at Baghdad in October, 1921.

ARTILLERY.

Of the four batteries of artillery the 1st and 2nd were raised in 1921, the former at Baghdad and the 2nd at Kadhimain. A third battery was raised in 1923, and a fourth in 1925.

The batteries are now stationed as follows :—

1st Field Battery, 18-pdr.	.. ..	Baghdad.
1st Pack Battery, 2.75 Gun	.. ..	Zakho.
2nd Pack Battery, 3.7 Howitzer	.. ..	Baghdad.
3rd Pack Battery, 2.75 Gun	.. ..	Baghdad.
All batteries are four-gun.		

Much care has been taken over the training of the artillery, who are probably more forward in this respect than any other branch of the service. The chief defect in this arm is, however, that there is insufficient of it.

A British officer at the Ministry of Defence co-ordinates all the work in connection with training, while each battery has a British Officer Instructor. The units, with the exception of the 1st Pack Battery at Zakho, spent two months in 1925 in an artillery practice camp at Qaraghan, where the practices showed a marked advance, both as regards tactics and gunnery. March and camp discipline have also reached a very creditable standard.

The artillery arm is very popular, and between sixty and seventy per cent. of the men re-engage. A few Iraq artillery officers have been sent to England, where they have spent a year attached to the Royal Artillery; and it is hoped that some more of these attachments may be arranged in the near future.

Two gunnery courses for officers in Iraq were held during 1925, each course lasting three months, and being modelled on the gunnery and tactics course at Larkhill. At present no artillery depôt exists, the recruits being drawn after three months from an infantry depôt and trained in the batteries.

INFANTRY.

The 1st Iraq Infantry Regiment was raised at Baghdad in July, 1921, and is at present stationed in the capital as one of the "Exemplar" battalions of the Army.

Further battalions were raised in 1921, 1922, 1923, 1924, 1925, and the six are now stationed as follows:—

1st Battalion (Exemplar)	..	Baghdad.
2nd Battalion (Exemplar)	..	Mosul.
3rd Battalion	..	Zakho.
4th Battalion	..	Sulaimaniyah.
5th Battalion	..	Nasiriyah.
6th Battalion	..	Nasiriyah and Halabjah.

Every battalion, except the 5th, has at some time in its career taken part in active operations in the nature of punitive measures, expeditions against the Kurds, or has done its turn on the frontier posts north of Zakho, and on the whole, with considerable credit. Between sixty and seventy per cent. of the rank and file are tribesmen as opposed to townsmen.

The training of the infantry has been severely handicapped, quite apart from the shortness of their service, by the considerable amount of dispersion to which units have to submit. A great deal of work which would normally be for police to deal with has fallen to them in the interior of the country, and has militated most adversely against the training of the battalions as proper military bodies. Efforts are being made to obtain a greater measure of concentration, but it is feared that political exigencies will still act unfavourably in this direction for some time to come.

As regards their armament, the infantry have that of the British infantry, except that only sixteen Lewis Guns and four Vickers Guns are with each battalion. The 2nd and 3rd battalions are an exception in that they have their full complement of Lewis Guns, while it is hoped shortly to bring them up to eight Vickers each.

During 1925 the training of the infantry throughout has made considerable progress. The 2nd, 4th and 6th battalions in Kurdistan gained some useful experience in hill warfare, at which the Arab is supposed to be anything but an adept, and proved that they could accomplish quite long marches and fight at the end of them. Keeness in field training, signalling and weapon training was noticeably greater than in the previous year, but digging of trenches and ceremonial are weak points, the Arab having a particular aversion to the use of the spade.

Firing a similar course to the British infantry, the results with the rifle were in 1925 as follows, throughout the six battalions:—

(a) *Trained Soldiers.*

- (i) 14.7 per cent. Marksmen.
- (ii) 47.8 „ 1st Class Shots.
- (iii) 30.0 „ 2nd Class Shots.
- (iv) 7.5 „ 3rd Class Shots.

- (b) *Recruits.*
- | | | |
|-------|----------------|------------------|
| (i) | 48.2 per cent. | 1st Class Shots. |
| (ii) | 33.3 | 2nd Class Shots. |
| (iii) | 18.5 | 3rd Class Shots. |

In addition to the infantry battalions, there is a "Frontier Company," which has been formed for the purposes of holding the posts on the mountainous northern frontier. This company consists largely of Assyrian Christians and others who are natives of that part of the country. They are armed simply with rifle and bayonet, and have no automatic weapons.

In 1925 three Infantry Depôts were formed for the reception of recruits who have been previously trained in a dépôt regiment. These dépôts correspond to the three administrative districts, and are located as follows:—

Eastern District—Baghdad (temporarily—there being no accommodation in Sulaimaniyah);

Northern District—Mosul;

Southern District—Hillah.

Recruits spend eighteen weeks at the Depôt, the first two being spent in collecting sufficient recruits to form a platoon, clothing the men, etc., and the remaining sixteen weeks in a carefully drawn scheme of progressive training, ending with the recruits' musketry course. It has unfortunately been found impossible so far to provide a British officer for each depôt. This is very much needed.

ADMINISTRATIVE SERVICES AND DEPARTMENTS.

It is under this heading that the greatest weakness of the Army is to be found, and this weakness is probably the most difficult to remedy, owing to the inherent disinclination of the Arab to interest himself in what pertains to administration. It is true that nothing approaching a European standard is necessary, owing to the national standard of life and habits of living, but, since the Army has been equipped on a most generous scale with up-to-date arms and equipment at considerable cost, it is essential to indicate a sound system of maintenance and administration.

There is at present no provision for Second Line Transport, the three existing transport companies only including that portion of the First Line Transport that is not permanently with units.

There is no Supply Service, a system of contracts which would scarcely function in the field being relied upon. Unfortunately, funds do not permit of a British officer being employed to organize these services.

The Medical Branch is equally deficient. The existing Iraq medical officers lack experience and are few in number. It is hoped, however, in 1926, to obtain the services of a British medical officer.

The Veterinary Corps is rather better off, but badly needs a British veterinary officer.

On the other hand, a determined effort has been made as regards the Ordnance. For some two years, this branch has been organized by an officer of the Indian Ordnance Corps, while a British Ordnance warrant officer is also employed as armourer. Iraqi artificers are being trained in the workshops at Baghdad, but there is a total lack of artillery ordnance artificers.

The Pay Department is likewise in a fair way to being properly controlled, a British officer having been installed for some three years.

Such, briefly, are the salient points that it has been thought convenient to tabulate for purposes of reference. Figures and basic facts by themselves do not, however, convey very much to the ordinary enquirer unless elaborated and analysed in relation to their results. It is the purpose, therefore, to attempt some such elaboration and analysis on very general lines.

Organization and methods of training are entirely British. With certain modifications, based on British Indian establishments, the strength of the units and internal arrangements thereof, are drawn up on the Provisional Small War tables as laid down for the British Army at home. The armament and equipment is entirely British throughout. British-made uniforms are worn, and these are of a very similar pattern, to those of our Army. The training manuals in use are an Arabic translation of our latest handbooks—Field Service Regulations, Cavalry, Artillery and Infantry Training and Musketry Regulations. Details of procedure and ceremonial are carried out on precisely the same lines as at Aldershot. Apart from lesser powers of punishment in the hands of the officers, discipline is maintained generally as laid down in the Manual of Military Law and The King's Regulations. It may then fairly be claimed that the Iraq Army does enjoy the advantages offered by British methods. The point as to whether too full an anglicization can wisely be applied to an Oriental people it is not proposed to consider further. As definite assets, regarding which there can be no dispute, there exists a sturdy and warlike material, intelligent and responsive to instruction, and almost entirely homogeneous in race and religion; and what is of great importance, a contented and well-found soldiery who give every evidence of amenity to discipline—a quality that might well not be expected from the desert Arab. Again, the Iraq soldier, unaccustomed as he is in his normal life to any measure of comfort, puts up with hardships as in the natural course of events.

Of his definite fighting qualities as a regular rather than a guerilla warrior, it is difficult to speak. Judging, however, by the conduct of an Arab battalion of the Iraq Levies which called forth the approbation of the then Commander-in-Chief, General Haldane, on service in 1920, there seems no reason to believe they would not acquit themselves well.

This belief would seem to be confirmed by the experience in Kurdistan in 1924, when both Iraq cavalry and infantry took part in operations of a very trying and exacting nature in the course of which some brisk engagements took place. The conduct of the troops on these occasions was most encouraging.

On the reverse side of the picture, the Iraq Army has certain essential military weaknesses which lie in its almost total lack of mobility and total lack of means of expansion. The fact that it is difficult to get the various arms together, and even at times retain a single unit concentrated, has made advanced training almost impossible. Again, the administrative organization is also deficient.

To the task of remedying these defects the British Staff is now addressing itself. As far as transport is concerned, units are unprovided beyond First Line, a portion of which, following the Indian method, is found by the Transport Companies, which latter in war would be wholly absorbed by this function. The Trains and Ammunition columns would have to be provided on mobilization by hired and requisitioned transport, for which no cadres exist. Mechanical transport does not exist, expense up to now having precluded the formation of this branch. On the medical side the transport situation is equally nebulous.

In other words, a good deal of improvisation would be necessary to endow any considerable proportion of the Iraq Army with power of manoeuvre on active service.

As regards capacity for expansion the Army is in still worse plight. The existing short terms of service with the colours were fixed on the creation of the Army because it was anticipated that recruits would not be attracted were the period made longer. Again, it was considered that in practice the liability to reserve service would necessarily be a dead letter with a nomadic people, many of whom had no fixed abode, and therefore could not be found for any annual training, much less for mobilization. Thus the existing short service Army lacks all the advantages of a voluntary army, and at the same time entails all the drawbacks that the expense of such involves. As a matter of fact, it was avowedly a "stop-gap," the political situation of the country demanding in 1921 some sort of army to be raised as quickly as possible. Now that conditions are more stable, the time is ripe for putting the Army on a more permanent basis, and one which will provide for expansion in time of war. Under present conditions mobilization would not be a very complicated process, for the war and peace establishments of units are the same.

The necessity for combined training of the various arms after the elementals of their work have been grasped by units is all too apparent in the youth of the new Army. Unfortunately, it is just in that direction that the Iraq Army has been especially handicapped. Internal conditions in Kurdistan and the middle Euphrates, and the long mountainous

line on the northern frontier, have necessitated a very full measure of dispersion. No small proportion of the Army may be said to have been on "active service" since it "left the nursery." Such conditions may be very valuable in themselves, but they hardly conduce to higher training than that of the individual or section, and certainly give unit or even company commanders little scope in the normal way. A serious effort has been made to ameliorate this state of affairs, and it is anticipated that the situation will be much assisted by the more settled conditions consequent on the decision on the Mosul question.

The lack of any Engineer Corps or Signal Corps are notable deficiencies that will have to be made good as soon as funds exist. Certain elements have already been collected for the nucleus of these formations, and it is hoped that they will be included in the 1927 Budget. The question of any form of mechanical traction is, too, a burning one, quite apart from the necessity of providing later some fighting vehicles, such as tanks or armoured cars.

At one time an Air Arm was contemplated, especially in view of the facilities that the presence of a strong R.A.F. in Mesopotamia offered for training purposes. Here again, however, expense has prevented anything being done.

On the administrative side the Army has a very great deal of leeway to make up and that, not only because it has been humanly impossible to pay the necessary attention and inspection to it, but also because the personnel are not, from their education or environment, accustomed to attach very much importance to the hundred and one details that go to make up efficient administration. "It is comparatively easy to teach them to throw bombs," remarked a British officer of an Iraq regiment, "but it's a superhuman task to teach them to sew on their buttons." Yet if the Arab soldier does not respond very readily to the need for looking after his kit or accoutrements he certainly does not embarrass the Quartermaster-General's staff with demands for the amenities and comforts of life. In that respect he is very easily satisfied.

Of its three cavalry regiments, one has a British Commander, three British Squadron Commanders and a British Adjutant. Two of the infantry battalions contain a British Commanding Officer and four other British officers. The training of every other unit, including the batteries, is supervised by a British Officer Instructor, who devotes his whole time to that unit alone. At the Ministry of Defence is the Inspector-General with a complete British staff as opposite numbers to the Iraq staff there installed. Thus from top to bottom the Army is permeated with British influence and methods. Under such circumstances, and with the excellent raw material available, it would be strange if good results did not quickly become apparent. Given the leaven which lies in the cordial relations existing between British and Iraqis, it is certain that such will be the case, thus confirming the wisdom of the policy that having "put our hands to the plough" in Iraq, we have "turned not back."

At the Conference of Lausanne in 1921, one of the Turkish delegates is reported to have been overheard to say to a colleague: "The British will create another Bulgarian Army in Iraq." The Turks should, indeed, have good reason to remember the disasters inflicted upon them in 1912 by a once-despised province of their Empire. The contemplation of such a contingency elsewhere than in Europe may not have been among the least of the reasons that dictated the attitude of Angora over the Mosul question.

Whether this be so or not, it may be assumed with reasonable certainty that the Turk is far too astute not to be aware that every day that passes makes his hopes in this last direction more and more difficult of realization.

CHINESE ARMIES OF THE PRESENT DAY

By MAJOR-GENERAL SIR J. S. FOWLER, K.C.M.G., C.B., D.S.O.

On Wednesday, 13th January, 1926, at 3 p.m.

MAJOR-GENERAL SIR J. T. BURNETT-STUART, K.B.E., C.B., C.M.G.,
D.S.O., in the Chair.

THE CHAIRMAN: Ladies and Gentlemen,—General Sir John Fowler is going to lecture to us this afternoon on "Chinese Armies of the Present Day." I need only say that General Fowler came home last year after completing a three years' tour in command of the British Troops in China.

LECTURE.¹

THERE is no such thing in China as a "National Army," that is an army with establishments authorised by the Government and paid out of National Funds.

There exist, in point of fact, a number of armies commanded by so-called generals who have succeeded in appointing themselves to their commands, and often call their army a "National Army." These armies are continually changing sides, sometimes taking the side of the nominal Government at Peking, sometimes turning against it.

The "generals" raise their armies as cheaply as they can and solely with a view to obtaining power and thereby lucrative perquisites. Consequently, the Government at Peking possesses no true authority in the country, although, by reason of old tradition, orders are still issued from Peking and may carry a certain amount of weight in most parts of the country.

It is, of course, a truism to state that China possesses a very ancient civilisation. It was not less than 2,500 years ago that Confucius taught the Chinese certain most excellent maxims for the conduct of life. But he strongly discouraged a martial spirit.

¹ Since this was delivered, Sir John Fowler, in view of the kaleidoscopic changes in China, has preferred to amend and to condense considerably his original lecture.

If the tourist wanders into Chinese temples he may see a figure of the God of War larger than life. He is indeed a ferocious looking individual, but the Chinese do not think much of him, in spite of his looks. This is also very much their attitude towards war.

It must also be remembered that China covers a very wide area, so wide indeed that it contains a population talking different languages, following different modes of life, and possessing different characteristics.

So if a Chinaman who is a native of Canton in the South should travel up to Tientsin in Northern China, he will not be able to make himself understood for a great part of his journey. He will not obtain the food to which he is accustomed, and the Northern Chinese will look on him as a foreigner to be fleeced in every possible way. Accordingly, it is not difficult to understand how there is no such thing in China as patriotism for China as a whole. The Chinese, it is true, may have some patriotism for their own Province or their own neighbourhood, but for China as a whole none at all. In other respects the Chinese will be found to have many estimable qualities, and as a people, I myself liked them well enough, and had several good friends among them. They are, as a whole, hardy, cheerful, very hospitable, very polite, quick to learn, not demonstrative, but all the time absorbing what outsiders have or wish to teach. The Chinese are, moreover, not in the least fanatical and very tolerant of all religions. It is worth noting there exists an appreciable number of Chinese Mahomedans, who keep their mosques in much better order than the Chinese do their temples.

The Chinese make excellent mechanics. A large number are now being trained to all such trades in the shipbuilding yards and the motor works of Hong Kong and of the Treaty Ports.

The Chinese coolie is very hard working when working for himself; when working for another, he will do as much as he thinks he is obliged to do. Nevertheless, he invariably has a hard struggle for existence, and will do anything for regular food, clothing and shelter, with the hope of a little money to permit of his indulging in what is really a national propensity for gambling.

From amongst such men it is quite easy to find any number of recruits who will enlist on the understanding that they will obtain these conditions of life. They appear to experience no compunction about fighting other Chinese, as long as their families are made safe from their enemy.

It is a principle of Chinese law and custom that the whole family is held responsible for the action of any member thereof, so that if any offender cannot be reached, vengeance may be taken on the family of the evil-doer.

It is an outstanding feature of modern China that robbers infest the whole country. A band of such brigands will readily be collected by any sort of leader, and then proceed to live on the country, levy

toll on trade, and capture rich Chinese or members of their families for ransom. These robber bands are badly armed and poor fighters; the ambition of most of them now appears to be to be enlisted in any one of the existing armies, yet they are still capable of carrying out a bold stroke. One might quote several recent examples. One band in Shantung held up the express train on its way from Shanghai to Peking and carried off a number of Europeans, including ladies, for ransom. The robbers eventually all surrendered on condition that they should be enlisted. I believe that some time afterwards 700 of these recruits were shot, ostensibly for mutiny but probably and really on account of their antecedents.

On the rivers also there are to be found any number of pirates who levy toll on the passing junks. Some junks carry old muzzle-loading cannon, but they seldom put up any fight. Pirates also board the passenger ships as passengers, and hold up the ship at some point convenient for the removal of loot. This is a very difficult practice to stop, even in ships under the British flag and when trading with Hong Kong.

The career of robber and pirate is facilitated in that the civil population is generally unarmed; the only arms I saw being carried in China—except, of course, those in the hands of soldiers—were the very antiquated muzzle loaders of Chinese shikaries in Northern China.

There is, however, a big trade being done in smuggling arms into China and much money is being made in the business. All these weapons mostly go to the armies and the robbers. Amongst these articles of contraband Mauser pistols are very popular.

Most of the great European Powers have undertaken to forbid the importation of arms into China, but it is a very difficult trade to stop. The large seizures of arms that are constantly made at Hong Kong and other ports seem to make little impression on this illicit trade.

Local transport conditions in China are also peculiar and affect military operations. Thus in Southern China there are no horses or mules or wheeled transport. The Southerner is very much afraid of a horse and would be no use for mounted or transport work. On the other hand, in Northern China there is found the famous Chinese pony and also some very fine mules. In addition, there are plenty of men who can ride well and understand transport work. Nevertheless, I never saw any cavalry in China, but Chang Tso Lin in Manchuria keeps some mounted troops who are said to be fairly efficient.

Of the Chinaman as a soldier it is not possible to generalise. The best soldiers in China—in my own opinion—are Yunanese, who come from the extreme West and men from the Shantung Peninsula on the East. But the Chinese as a race, though lacking martial spirit, are by no means cowards. In the police forces of Hong Kong and of other treaty ports which are recruited exclusively among Chinese, they often show great individual courage. It may also be stated that the late

General Gordon's "ever victorious" Chinese army fought well against badly organized Chinese armies. Later our own Wei-Hai-Wei Regiment, recruited from Shantung men, but trained and led by British officers and N.C.O's., proved itself an excellent fighting force. It fought well against the Chinese Boxers in the 1900 campaign for the relief of Peking. In the Shanghai Volunteer Corps the Chinese company is one of the best shooting companies in the corps. In addition it may be asserted that the Chinese make excellent field engineers, being particularly clever at building bamboo piers and bridges and moving heavy weights. In China proper the nature of the country is difficult for military operations. The rich plains of the deltas of the Yangtsii and Yellow Rivers are cut up by innumerable waterways, where there exist no roads for wheeled transport and no bridges. The rest of the country is as a whole very mountainous, crossed by tracks suitable only for pack transport. Practically the only good roads existing in China are those that have been built in the territory of Hong Kong or in the Treaty Ports. The fact remains that the Chinaman is a wonderful sailor and a great waterman, so that quite naturally the great means of transport throughout China is the junk.

In North China the cold in winter is extreme and little campaigning can be done during this season.

The various armies existing in China at the present time are, generally speaking, well equipped with modern small bore magazine rifles and a fair supply of small arm ammunition. As I stated earlier, munitions of war are brought into China in spite of the international embargo in sufficient quantities to supply these forces. There have also been organized a number of quite good arsenals scattered about the country, capable of turning out quite good small arms, machine guns and ammunition. The best Chinese arsenal, at the moment, is that of Chang Tso Lin in Manchuria, on which he has spent several million sterling. This is capable of turning out 100 rifles and 300,000 rounds of S.A.A. daily; 100 field guns in a year and 500 shells a day. But the upkeep of all arms, once they are issued to the troops, is indifferent.

The uniform and equipment of the troops is rather flimsy. A blue grey uniform is universal for all armies and the only distinguishing mark is an arm band. This peculiarity facilitates the changing of sides. The armies possess no real transport. The only organization of this kind depends wholly on the impressment of local transport. This may be of any and of every type. It is very badly organized, equally badly managed. The impressment of local resources is carried out on rather haphazard lines and causes great hardship and loss to the farmers.

Ambulances and hospitals are practically non-existent. There are very few tents, so the troops are billeted in the villages.

Supply arrangements are most indifferent.

I will now offer you my own personal impressions of the leaders of these Chinese armies.

Feng Yu Hsiang, the "Christian General," invited me to see his troops outside Peking more than a year ago. Feng himself is a big man of about 40 years of age. We first inspected a company engaged in company drill. The men wore the usual blue grey uniform. Their equipment appeared quite serviceable. The rank and file were well turned out. At drill they were extraordinarily precise and quick. We next saw a battalion doing battalion drill. The men were very smart in all their movements.

Feng was reported to have 20,000 troops present with him at the time, but we saw only that one battalion. No information was forthcoming as to what field training or musketry was being done.

Then about 200 officers, from Colonel downward, gave a gymnastic display and raced over a formidable obstacle course. They appeared remarkably fit and active. Then we were taken round the barrack rooms and cook houses, which were very clean and tidy. In the barrack rooms, both officers and men were employed at looms weaving cloth for uniforms. They also made towels, soap and leather equipment. Feng's men were nominally Christians. Very strict discipline was enforced among them: no smoking or drinking being permitted, nor any female society allowed in the neighbourhood. My own impression of Feng was that he was a very ambitious man and a great organizer. His army seemed to me to be a "one man show," which depended solely on Feng himself for its value and efficiency. He has on more than one occasion turned on his allies when the consideration offered was a sufficiency of dollars.

I never saw Wu Pei Fu, but I have seen his troops on the railway. They were well turned out and equipped. He himself is said to be very vain of his capability as a commander and he is intending to write a new volume of "Maxims of War." His defeat by Chang Tso Lin, to which his ally, the "Christian General," largely contributed by going over to the enemy, considerably lowered his prestige.

Chang Tso Lin invited me to see him in Mukden. He is the real ruler in Manchuria and liked by the foreign residents. A small man of about 55 years of age, very quiet and gifted with a low voice. Originally a bandit chief, he fought for the Japanese in the Russo-Japanese war, and then made himself ruler of Manchuria. He is said to gamble a good deal for very high stakes. To have become what he is, he must certainly be a great leader, but is said to be of a nervous disposition, which will prevent him becoming a possible strong ruler of a United China.

I met the ex-Emperor in his palace at Peking, a very charming youth of about 18, who until he was turned out of his palace by the "Christian

General," had led a very secluded life. There does not now appear to be much chance of his being restored to the throne.

In addition I met other leaders who are less well known ; they were all most courteous and friendly to the British.

The railways in China have been largely used for moving the various armies about and most of the fighting has taken place on the Peking-Mukden Railway, which runs from Peking through Tientsin to Mukden.

By the protocol of 1901 the Foreign Powers are entitled to have the railway kept open for traffic from Peking to Shan-Hai-Kuan, on the frontier of Manchuria, and no fighting is to take place within a mile and a half on either side of the line. As a matter of fact this railway has been frequently blocked by the mass of troop trains that have been run over it. The railway staff have been helpless, as the military commanders have insisted on trains being run quite regardless of traffic regulations. Trains are despatched with utter disregard of their being room for them in sidings or not. They are often left standing on the main line itself. Troops are thus left for days, without food, in the trains. So they wander off to loot the villages. Engines break down owing to their being kept continually under steam. So the confusion grows. The want of organization is as bad as it can be. After the retreat of Wu Pei Fu in 1924 it took weeks to get the line clear for traffic.

Of foreigners in the Chinese armies there are scarcely any at all. At Canton are to be found a certain number of Red Russian military instructors, while a military school has been founded there and is being run by Russians.

Chang Tso Lin enlisted a number of White Russians in a regiment under Chinese officers. These men, I believe, fought well and were used as assault troops. But the fact remains that it is difficult for foreigners to learn the Chinese language. Moreover, the Chinese officer is very vain of his military knowledge, and does not readily submit to foreign instruction. There seems little prospect of the Chinese armies being organized or run by Europeans.

There is a military staff college near Peking, and officers from the various armies are invited to attend the Japanese army manoeuvres.

Before a campaign starts in China, there sets in an interminable period of intrigue as to which side the various generals are to support. A good deal of money passes and many promises are made as to lucrative positions that will be gained. When the sides have been finally arranged, each issues a manifesto declaring that the others are traitors, and offering a reward of so much for the leading adversaries alive or dead. The enemy is invited to desert, and a scale of rewards to be gained by desertion is published—there is a regular tariff—so much for a colonel and his battalion down to the amount fixed for a private soldier with his rifle.

Plans of operations appear to be fairly well worked out, and no doubt the staff work is improving.

In actual fighting the greatest casualties appear to be inflicted by machine guns, which are better handled by the Chinese than their artillery. Rifle fire is said to be very wild. In recent operations there have certainly been very heavy casualties.

Campaigns have not been fought out to a finish with a decisive victory for one side or the other. There is so much intrigue and jealousy among commanders that they appear to be unable to allow any one commander to become pre-eminent, and so intrigue goes on.

It can be said, however, that the Chinese armies are at the present time becoming really formidable on account of their numbers and modern equipment. Their training in war must be improving and no doubt will continue to do so.

It is impossible to predict what may happen in China in the future; but it may be accepted that the only chance of an end being put to the prevalent chaos is that a really powerful dictator should arise in Peking and make his authority felt throughout that distracted country.

Yet one may well wonder whether any one of the existing and known leaders would be able to control the situation, should he succeed in seizing such a position. With the exception of Chang there appears nobody in whom Chinese or foreigners alike have any confidence. A fresh element of uncertainty is also coming into the situation, in that recent acts of treachery on the part of subordinate commanders show these latter to have grasped the fact that loyalty possesses a market value. Under such circumstances any forecast of the probable course of events could only be misleading.

DISCUSSION.

CAPTAIN C. R. SPEAR: I have listened with great interest to Sir John Fowler's instructive lecture. Might I now add a few words in appreciation of it?

Sir John Fowler, in his opening remarks, stated that there is no National Army in China. Might I state that the Kuo Min Chun, which has lately sprung into existence, is by title a "National Army." Of course, until the recent withdrawal of Feng Yu Hsiang, this army was nominally under his command, and not national in fact. There are two distinct elements in its ranks, one side leaning towards extremist ideas and the other holding more moderate views. This Kuo Min Chun was the outcome of Feng's *coup d'état* in October, 1924, when he withdrew his troops from the vicinity of Jehol, returning to Peking, there to resume control. It is difficult to gauge the fighting values of these forces, as previous to the civil war, which has been in progress for the past few months, they had not been engaged in any serious fighting. Their equipment, although bad when compared with European armies, is a distinct advance upon the equipment of previous Chinese land forces.

With regard to establishments, although some Chinese military text-books do give a certain amount of data in this respect, it is impossible to estimate the total strength of China's armies, as units are never maintained at full strength. Military commanders in China, with a view to replenishing their coffers, seldom replace casualties during peace-time, and by forgetting to remove the names of casualties from their strength, continue to draw pay for their published strength—that is, whenever there is any pay to be drawn.

Out of the three well-known military leaders of the past few years, Wu Pei Fu, by his defeat of Chang Tso Lin in the civil war waged during the spring of 1922, became the dominant military factor in North China for about two years. He established his headquarters at Loyang, in Honan, where he quartered the Third Division, the pick of his troops. This division went through some hard fighting during the civil war of 1924, and acquitted itself well. It was well trained throughout, its artillery being worthy of special mention. One of the language officers, who was in China at the same time as myself, happened to be posted as an observer during the fighting in the autumn of 1924 and saw some of Wu Pei Fu's 3rd Division artillery in action. His description of it was that it employed tactics very similar to those in use in our own artillery at the present day.

Consequent upon the defection of Feng Yu Hsiang in October, 1924, Wu suffered a crushing defeat, and has been living more or less in obscurity ever since. It would appear, however, that he is now coming into the limelight once again, and with the new grouping of the Provinces which is certain to take place as a result of Feng's withdrawal, it is probable that he may come forward again as an important military leader.

Chang Tso Lin, the ruler of the three East Provinces, withdrew his troops north of the Great Wall after his defeat in 1922, and concentrated all his energies on re-equipping and training his troops. It is fairly certain that he has at times received considerable assistance from outside sources, but it is wrong, in my opinion, to look upon him as anybody's pawn. He has been doing very much the same as Feng for the last twelve months, making use of other people when he can. In the spring of 1925 he had an army superior in equipment and training to that of any other military leader in China. Besides being well provided with field and mountain guns, he possesses a considerable number of trench mortars of an improved pattern. When on a visit to Mukden in May, 1925, I learned that Chang Tso Lin had just signed a contract for a further consignment of aeroplanes, thus bringing his total strength in this arm to over 200 machines.

Chang owes a considerable portion of his success to his choice of Yang Yu Ting as his Chief of Staff. The latter is a Japanese-trained man, and in an interview which I had with him in May, 1925, I was greatly impressed both with his handling of military affairs, and his appreciation of the situation existing in China to-day *vis-a-vis* of the foreign Powers.

Feng Yu Hsiang came into the limelight as "the Christian General," and his division was held up as an example of what Christianity could do for the Chinese soldier. As I have already stated, these troops had not been seriously engaged in battle until the last few months, which rendered it impossible to estimate their capabilities with any degree of accuracy. Feng is very anti-British, due, according to his own statement, to our alliance with Japan in the past. He traces the enforcement of the twenty-one Japanese demands to this alliance, and is never tired of saying so. Subsequent to the Shanghai shooting affair at the end of May, 1925, Feng made some violent anti-British pronouncements, and since then has been

in close touch with the Government of the Soviet Republic. Money, arms and ammunition have been coming to him very freely from this source. With his withdrawal from the stage, it is difficult to predict the future of the Kuo Min Chun, but it is unlikely to remain for long a united force.

General Sir John Fowler touched upon General Gordon's force in China, and also mentioned the Wei-Hai-Wei Regiment. I would like to ask him if, in his opinion, an army of Chinese, run on similar lines to our Sepoy army in India and officered with foreigners, would to any great extent enhance the value of the Chinese soldier as a fighting man.

The training of the Chinese Army is moulded chiefly on German and Japanese lines, and the text-books published in the vernacular have been compiled from these sources. I have seen many of these Chinese troops on parade, and their drill is precise, but they fail when they are in the field. Communications during war are usually bad, with very little regard to eventualities. Sir John Fowler remarked how train after train was run, one after the other, in 1924, and what confusion ensued. That has also happened at other times. At the time of Feng's defection, when a real emergency arose and Wu was forced to retreat, there was a large concentration of trains very close behind the battle front, yet not a half per cent. of them had any fire in the engines at all, with the result that, when the retreat had to be hurriedly undertaken, all the guns and everything else had to be left behind. Again, in December, 1924, during the Fengtien-Kiangsu campaign, south of Tientsin troop trains were pouring down the Tientsin-Pukow line for days. The Kiangsu troops then blew up a railway bridge just north of Hsu Chow Fu. No effort was made to divert the incessant stream of troop trains from the north, with the result that over a score of these trains telescoped at Lin Cheng, causing such confusion that no movements could be made in any direction for a considerable time. These instances serve to illustrate the failure of the staff in Chinese armies to anticipate eventualities.

China has now got her own arsenals, but the only two of great importance are at Hang Yang and Mukden. The latter is very up-to-date, equipped with European machinery, and numbers some foreigners amongst its staff. Small arms, S.A.A., field and mountain guns and shells are all manufactured here, and I also noticed a six-inch howitzer, which I was informed was to serve as a pattern for the future construction of howitzers at this arsenal. Subsequent to the Shanghai trouble at the end of May, the output of the arsenal had almost been trebled. The staff was working twenty-four hours a day in preparation for the coming struggle.

I would now like to turn for a moment to a part of the Chinese Army which is not so well known—I refer to the Kansu Mohammedans, in the north-west of China. During the summer of 1924 I had an opportunity of being escorted by them for over 500 miles, when I had ample time to study their characteristics. Their leader in the north-west is General Ma Chi, who is also the Amban of the Kokonor area. His troops are amongst the best I ever met in China. They are well trained, expert horsemen and good shots. At his headquarters in Sining Fu in the north-west of Kansu, I had an opportunity of studying his methods of training, and was surprised to find that he had instituted inter-company and inter-platoon competitions amongst his men. This force is, of course, numerically small, but being so well trained constitutes an important factor in the north-west. The Mohammedans in this area are very conservative and may yet prove a stumbling block to Soviet plans. Further, when one realises that their powers extend to the borders of

autonomous Tibet, their importance should not be overlooked. A military post at Jyekundo in the Kokonor controls this area, and the Tibetans appear very contented under their rule.

THE CHAIRMAN :

I think what we have heard this afternoon will help us to read with greater understanding the rather confusing reports which we see in our morning papers about China. As General Fowler said, no one is likely to be so rash as to try to prophesy what is likely to happen in China, either in the near or in the distant future. As regards the present situation, there is a sort of lull. The weather is against fighting. Chang Tso Lin, having defeated the general who mutinied against him, is reorganizing in Manchuria and sitting tight. He may or may not try to get back to Tientsin again. Feng, the so-called "Christian General," has rather intrigued himself silly, I think. He has found that only one of the three National armies that he relied upon is faithful to him, and he seems to be rather unwilling to assume the unenviable position of dictator in Peking. The rumour of his going on a European tour, with Moscow as his first stopping place, has been revived again. He may or may not go. Having mixed himself up first of all with the Soviets, and then with the allies, and with the murder of Little Tsu, he may find it convenient to disappear. Anyhow, he is quiet for the moment. Wu Pei Fu, in the Yangtse Valley, is sitting there with 100,000 men, and is counting his money, and possibly awaiting a call to go to Peking. Nobody knows what he will do. At Canton the Soviet Canton troops are practically in charge of the situation. The result is a momentary lull. What all the powers want is some form of Coalition Government in Peking which will be sufficiently representative to answer for these various military commanders, and at the same time be able to treat with the Powers as regards foreign policy. At present there is no Government in Peking at all. The only alternative seems to be a Soviet regime in Peking, and that for us would be disastrous.

As regards British interests in China, we are not apprehensive of any great degree of anti-British violence, because the Chinese know that we are ready to give concessions. We are not frightened of the Chinese soldiers. What we are nervous about is the amount of armament that is going into China. That is really the most serious feature in the present situation—the way China is being supplied with modern arms. Those arms come in from various sources. The Soviet Government is responsible for the importation of a great deal, and breaches by European nations of the Arms Embargo account for a good deal more. Their own arsenals also are becoming more and more efficient.

I think you would like to register in the usual way your appreciation of General Fowler's most interesting lecture. (Applause.)

GENERAL SIR EDMUND BARROW, G.C.B., G.C.S.I., then moved a vote of thanks to the Chairman which was unanimously accorded and the proceedings then terminated.

THE SITUATION IN CHINA

THE situation in China has undergone a complete and dramatic change during the past quarter.

At the commencement of December last the dominant factor was the threatened collapse of Chang Tso Lin. His position had been jeopardised by the mutiny of those of his troops commanded by his subordinate, Kuo. There is little doubt that the strain of abstaining from looting, and from joining in the so-called "national" movement, became too great for Chang's mercenaries, many of whom had served in other reactionary armies twelve months previously.

Kuo, the leader of the mutineers, was operating to the east of Tientsin. At the head of some 70,000 disaffected troops, he moved north-east along the railway towards Mukden and occupied Chin Wang Tao and Shan Hai Kwan in succession, and his advance was only checked on reaching that branch of the Liao River which flowed across his path some twenty to thirty miles west of Mukden.

Chang, however, was able to occupy the left bank of the River Liao with a well-equipped force numbering anything between 70,000 and 100,000 (mostly Manchus) and in an action on 23rd and 24th December, in which cavalry and aircraft co-operated, Kuo's forces were completely routed by a flank attack. It was a dramatic turning of the tables. Kuo and his wife were both executed.

But victory strained Chang's resources to the utmost. All the North Manchurian garrisons had to be denuded of troops in order that Mukden should be saved. Possibly Kuo might have succeeded had it not been for the timely return to Mukden of General Yang Yu-ting, formerly chief-of-staff, whose military knowledge and soldierly qualities generally make him pre-eminent among Chinese militarists to-day.

Simultaneously there had been some severe fighting between Peking and Tientsin. General Li Ching Lin, who held Tientsin for Chang, remained loyal to his chief, and prepared to meet attacks from three sides. As a defensive measure, he destroyed important bridges on the Peking-Mukden Railway to the north and to the south-east of Tientsin (thereby infringing the protocol of 1901, and its subsequent ancillary agreements).

Feng's troops, advancing south from Peking, were defeated in a series of minor engagements between 18th and 20th December, and

it was not until a week later that the defence finally broke, and Feng secured Tientsin, the seaport of Peking.

The results of this victory were important, in that Feng—for the first time since he set up as an independent military party a year ago—reached the sea, and so was in a position to secure shipments of arms and munitions from those European countries which are not parties to the China arms embargo.

In the meanwhile Wu Pei Fu made no overt move of importance, doubtless watching the outcome of events in Manchuria and the north.

This fighting, however, was to cause trouble of another kind. Since September, 1924, the Manchurian Sector of the Chinese Eastern Railway has been operated by an agreement, in which the Central Peking Government was not consulted, between the Soviet and Chang Tso Lin, as head of the "autonomous Government of Manchuria." By this agreement, Soviet officials were to operate the railway whilst Manchurian officials administered the railway zone.

About the middle of January, the Soviet officials refused to continue to convey Chinese troops free of charge over the Harbin-Changchun sector of the lines and, on 21st January, Chang caused the Soviet director, Ivanoff, to be arrested, and forcibly moved military trains over the sector.

On 22nd January, the Soviet Foreign Office sent a note to Peking and Mukden demanding:—

- (i) The release of Ivanoff within three days.
- (ii) The restoration of normal traffic on the railway.

If these demands could not be met the Soviet Government requested the Chinese Government "to permit the U.S.S.R. to restore order with Soviet forces." The eyes of China were thus at last opened to the fact that Soviet Russia is just as imperialistic as other Powers whom she had regarded as her enemies. The effect was to produce a strong anti-Bolshevik feeling. As Chang had recently announced his complete independence of the Peking Government, matters seemed to be shaping badly. But an agreement was signed at Mukden on 24th January. Ivanoff was released and it was agreed that normal traffic should be resumed and that Chinese troops should be transported as hitherto, the cost being debited against the Chinese Government's share of the profits of the railway.

Meanwhile, the result of the December hostilities in North China seemed to indicate that Feng and the Kuomintang party would be left supreme. But by the third week in December the political outlook appeared more complex than ever. The Provisional Chief Executive, Tuan Chi Jui, was still nominally in office, but was virtually a prisoner. On 28th December the list of the new Cabinet was promulgated. Tuan Chi Jui remained as the nominal head, and Hsu Shih-ying was nominated as Premier. The remaining officials were mostly followers

of Marshal Feng. On 6th January, the Marshal himself announced his intention to retire from public life. Whether this step was dictated by genuine motives, or whether Feng did not feel assured of adequate support, is not easy to say; however that may be, after remaining some time in the vicinity of Kalgan, he seems to have thought it prudent to retire to Urga, and is now said to be in Moscow.

But the crisis was shortly to materialise. The "Red" or extremist wing of the Kuomintang Party in power at Peking evidently felt it was time to show its hand, and caused the Government to order a punitive expedition against the southern wing of the anti-Red combine, and especially against Wu Pei Fu, described by a Kuomichun General as an "aggressive and irreconcilable element" and who, in the mandate itself, was denounced as a "low disturber co-operating with bandits to destroy the peace of Honan and Shensi." Doubtless the "Reds" had become aware of the alliance which was in the making between Wu and Chang and the designs of these two leaders and of Li Ching Ling for concerted action. Their object, therefore, was to try and defeat Wu first. But it did not succeed.

The Peking Government nominally had at its disposal the following forces:—

First National Army.—Situating between Peking and Kalgan.
Nominal strength, 45,000.

Second National Army.—Situating in Northern Honan. Strength about 40,000.

Third National Army.—Occupying Tientsin. Approximate strength, 60,000.

Since Feng's retirement, the principal National military commander was General Lu Chung-lin, G.O.C. Forces in Chihli and Peking.

Of the three National Armies, the First was the most efficient, as Feng had imprinted upon it his personal sense of discipline and efficiency. The Second Army was violently "extremist." The integrity of the Third National Army appeared to be questionable, and important formations of it quite likely to secede to the "anti-Reds."

The "Anti-Red" combines comprised:—

General Wu Pei Fu, of the Yangtze federation, operating from Hankow. Strength, 45,000.

Marshal Chang Tso Lin, of Manchuria. 30,000 troops south-west of Mukden.

General Sun Chuan Feng, in Kiangsu. Strength, 60,000 to 100,000.

General Li Ching Lin, a vassal of Chang's, in Shantung.

Of these Sun Chuan Feng has proved a luke-warm co-operator. He has established himself at the mouth of the Yangtze and with Shanghai,

the richest prize in China, in his possession shows no inclination to be drawn into any adventures. The converging movement, planned by the other three, however, was completely successful.

Chang advanced on Peking from the north-east along the Peking-Mukden railway. Wu advanced north along the Hankow-Peking Railway. Li, operating from Shantung, made for Tientsin, whence he had been evicted just before Christmas.

The net result has been the complete defeat of the Red (so-called National) forces, which retreated to the north-west, leaving Peking in the hands of the allies, and the "Central Government" has disappeared. A Committee of Safety, consisting of influential citizens, was formed and maintained order in Peking.

There is now likely to be a period of quiescence, during which the various successful elements will intrigue to secure the spoils of office. Eventually, if internicine warfare is avoided, we may hope to see a new Central Government with claims to recognition by the civilized Powers.

REORGANISATION OF THE HIGH COMMAND OF THE FRENCH NAVAL FORCES

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THE following reorganised system of High Command of the French Naval Forces was brought into being in January of this year (1926) :—

COMMANDERS-IN-CHIEF AFLOAT.

The Vice-Admiral, Chief of the Naval Staff in peace time, assumes Supreme Command of the Navy on the outbreak of war, with the title of Commander-in-Chief of French Naval Forces, exercising this command from on shore.

His duties as Chief of the Naval Staff are then undertaken by a Vice-Admiral, nominated in time of peace, who assumes the title of Deputy Chief of the Naval Staff ("Major-Général de la Marine").

Two Vice-Admirals, in time of peace, are appointed as Inspectors-General of the Naval Forces of the North and of the Mediterranean respectively. On the outbreak of war they assume command of these forces with the titles of Commander-in-Chief of the Naval Forces of the North (the North Sea, Channel and Atlantic) and Commander-in-Chief of the Naval Forces of the Mediterranean. They may carry out their duties from on shore or afloat, but do not displace the existing Commanders-in-Chief afloat, who still retain the executive commands. These naval forces include high sea forces, patrol forces, and the fixed and mobile land, air and floating defences in their areas. It is to be noted that operations taking place in the Atlantic may not always come within the first-named area, the limits of which will be fixed according to circumstances by the Commander-in-Chief, French Naval Forces.

In times of peace these two Vice-Admirals form part of the Superior Council of the Navy; as Inspectors-General they are without executive authority, each Commander-in-Chief and Préfet Maritime being separately responsible to the Minister of Marine for the forces under his command.

In war, the patrol forces will be commanded, in each of the following seas, viz., Mediterranean, Channel, North Sea and Atlantic, by a Flag Officer appointed in time of peace. On mobilisation, these officers assume the title of "Senior Officer in Command of Patrol Forces . . ." (Commandant Supérieur des Forces de Patrouilles . . .), and are responsible to the Commander-in-Chief of their maritime areas.

ADMIRALS SUPERINTENDENT.

Consequent on the introduction of a Deputy Chief of the Naval Staff (Major Général de la Marine) the title of Admiral Superintendent (hitherto Major Général de la Marine, Cherbourg, Brest, etc.) has been changed to "Major Général du (1st, 2nd, etc.) Arrondissement"; their duties remaining unchanged.

PRÉFETS MARITIMES.

For military and administrative purposes the coast is divided into six naval arrondissements.

A Vice-Admiral is Préfet Maritime of each of the following arrondissements:—1st, 2nd, 5th and 6th.

A Rear-Admiral is Préfet Maritime of the 3rd and 4th respectively.

In peace time a Préfet Maritime of Vice-Admiral's rank holds the title of "*Commander-in-Chief* and Préfet Maritime."

Duties of Préfets Maritimes. Responsible for the defence of the coast, for anti-aircraft defences, for all technical and administrative services, including the recruiting of personnel. He has under his orders—

- (a) The naval arsenal of the port.
- (b) The naval bases (administrative purposes only).
- (c) Vessels attached to the coast defence.
- (d) Vessels in reserve or doing trials.

To whom responsible. In peace time, the Vice-Admirals are directly responsible to the Minister of Marine.

The Rear-Admirals (3rd and 4th arrondissements) to the Vice-Admiral (2nd arrondissement) for all matters concerning coast defence, and to the Minister of Marine for all other matters.

In war time, the Vice-Admirals to the Minister of Marine for all matters of a technical or administrative nature which do not concern operations.

In all that concerns operations, to the Vice-Admiral Commander-in-Chief of the Naval Forces of his particular theatre of operations.

The Rear-Admirals (3rd and 4th arrondissements) as in peace time. In peace time the Préfets Maritimes reside in the principal naval port of their respective arrondissements; in time of war they may transfer their headquarters according to circumstances.

NAVAL SECTORS.

For military purposes the coast of each arrondissement is divided into naval sectors, commanded, as a general rule, by Flag Officers or Senior Naval Officers. Supplementary sectors may be formed in time of war.

The commands of these sectors are directly under the *Préfet Maritime* of the *arrondissement*; the Rear-Admirals, *Préfets Maritimes* of the 3rd and 4th *arrondissements*, are also Commandants of the naval sectors constituted in their respective *arrondissements*.

NAVAL BASES.

The naval bases in each *arrondissement*, with the exception of the main naval base, are under the command of Flag Officers or Senior Naval Officers, having the title "in Command of Naval Forces at . . ." (*Commandant la Marine à . . .*). These officers, as a general rule, are in command of the naval sectors in which their bases are situated. They are directly responsible to their *Préfets Maritimes*.

SUPERIOR COUNCIL OF THE NAVY.

Consequent on the reorganisation of the High Command, the post of Inspector-General of the Atlantic Coast has been abolished, as being superfluous.

The Vice-Admiral recently holding this appointment was also in command of the Staff and War Colleges, and he is now free to devote himself entirely to these colleges.

The Superior Council of the Navy is a purely advisory body, specially charged with furnishing considered opinions on questions relating to naval warfare and coast defence. It is composed of the following members :—

- (1) The Minister of Marine (President).
- (2) The Chief of the Naval Staff (Vice-President).
- (3, 4) The two Vice-Admirals, Inspectors-General of the Naval Forces of the North and of the Mediterranean.
- (5) The Vice-Admiral Commanding the Mediterranean Squadron.
- (6) The Vice-Admiral Commanding the Naval Staff and War Colleges.
- (7) One Vice-Admiral serving in Paris, selected annually by the Minister of Marine (this year, the officer selected is Vice-Admiral Varney, President of the Technical Committee).

The Minister of Marine may nominate other Flag Officers as additional members of the Council, at his discretion.

The two Assistant Chiefs of the Naval Staff are consultants, a Senior Naval Officer acts as Secretary, and one of the Flag Officers acts as reporter of the Council.

The Chief of the General Staff of the Army and another member of "le Conseil Supérieur de la Guerre" are also co-opted on the Council in a consultative capacity.

The Council deals with all questions concerning—

- (i) General organisation of the Navy.
- (ii) Procedure for recruiting, training and utilising men and officers.
- (iii) General organisation of coast defence.
- (iv) Naval construction programme.
- (v) General characteristics of the various units to be laid down, including seaplanes and airships.
- (vi) Fighting tactics of the naval forces.
- (vii) Creation, extension or suppression of naval arsenals, *points d'appui* of the fleet and coast defence works.

The Superior Council is summoned by the Minister of Marine as often as is necessary for the examination of matters submitted to him. It may also be convened by the President of the Republic, in which case the President of the Council (Ministerial) is always invited to attend.

The proceedings are secret and a permanent record is kept.

The action to be taken as a result of the report of the Superior Council rests with the Minister of Marine.

POWER ALCOHOL

By BEN. H. MORGAN, M.I.A.E.

OF recent years few inventions have so profoundly affected the conduct of war as the internal combustion engine. The extraordinarily rapid development of this form of power production has been due, almost entirely, to a plentiful supply of liquid fuel being available. The engine is, of course, specially designed to use this fuel.

There are signs, however, that although vast quantities of petroleum are being drawn out of the earth in many parts of the world, the supplies may, in a comparatively short time, be insufficient to cope with the very rapidly-increasing demands.

There are few countries which are really self-supporting in the matter of petroleum, and in many, particularly Britain, the importation of this fuel has assumed gigantic proportions. Any disturbance which in any way affected importation, might at once cause a very serious position to arise, and might vitally affect a country's commerce and powers of defence. Such a calamity could only be minimised by the use of some form of fuel that could be produced in sufficient amount from sources within the affected country. There is, at present, only one fuel that answers to this description, and that is alcohol. In this connection it is as well to recall how acute was the petrol problem in this country during the Great War, and how inadequate were the various methods adopted to minimise it.

Alcohol, as a motor fuel, has been used for rather more than thirty years, and the term "Power Alcohol" has crept into use slowly. It must be clearly understood that this term has a different meaning from that which is associated with "power petrol," for this is not low-grade alcohol.

Alcohol alone is not suitable for use in the ordinary internal combustion engine, designed, as it is, for the combustion of petrol, but if alcohol is mixed with other suitable fuels, such as ether, benzol, or petrol, a fuel is obtained which gives extremely good results. Such mixtures are generally referred to as Power Alcohol or Power Alcohol Mixtures.

It is quite obvious that it is out of the question to attempt to adapt the enormous number of engines, designed for petrol and already in use, for the combustion of pure alcohol, and at the moment the main object is to produce mixtures of alcohol with other fuels and so conserve to some extent supplies of petroleum. There is, however, every reason to anticipate that in the comparatively near future the problem of designing an internal combustion engine for using alcohol alone will be as completely solved as is that of the petrol engine to-day.

Experience has already shown that the use of mixtures of fuel in which alcohol functions as an essential component does offer distinct advantages over the use of ordinary petrol, and in the course of the next decade it is certain that there will be established a very big demand for such mixtures as motor fuels. The demand can be met with absolute confidence, for the production of alcohol can be carried out in almost any part of the world, as the sources from which it can be produced are so varied.

Alcohol is obtained by synthetic or by natural fermentation processes, but commercial success has, so far, only been achieved by the fermentation processes. During the Great War the shortage of alcohol in this country became so very acute that every effort was made to develop the synthetic methods, and a considerable amount of success followed efforts to obtain it from coke oven gases and from acetylene. It is very doubtful, however, whether either of these processes could be made a commercial success for many years to come, and it is now recognised that the problem of the synthetic production of alcohol has only been touched upon. On the other hand methods employing fermentation have been particularly successful. It is one of the oldest known operations and the large amount of accumulated experience together with modern scientific methods render it one of the best operated industrial processes in the world.

Alcohol can be produced from natural products which fall into three main classes, but it should be noted that it is difficult to sharply define these divisions.

- (1) Products containing carbo-hydrates in sufficient amount, i.e., sugar-cane, sugar, molasses, sugar beet, mahua or mowra flowers, mangolds, etc.
- (2) Products containing starch, i.e., potatoes, artichokes, maize and cereals.
- (3) Cellulose in various forms—wood, peat, straw-grasses, etc.

All of the substances are produced by a process of photo-synthesis or carbon assimilation from the atmosphere, and by absorption of water and salts from the soil. They can in turn be broken down to alcohol by various suitable methods.

Materials containing sugar can be suitably treated to obtain solutions containing the sugar and this in turn fermented by fungi or yeasts, while

starch-containing materials can be treated so as to break them down directly to alcohol or be first converted to sugars and these in turn fermented. Both groups of materials have given perfectly satisfactory alcohol production, and the processes are thoroughly understood.

Cellulose-containing materials have been looked to for many years as likely to give a very valuable source for alcohol production, but until quite recently there has been little evidence that the process has any great commercial value. Very recent work has shown that cellulose as the starting point for alcohol production is without doubt the most valuable and economical of all products.

It will be seen from this very brief summary that the sources of alcohol are extraordinarily varied and divergent, and it will be recognised that however great becomes the demand for alcohol the supply of raw material will be forthcoming in sufficient amount to meet it, and at the same time the food supplies of the world need not be called upon to supply it.

The ordinary process of fermentation of sugars, and also the Amylo-process of converting starch to sugar and then to alcohol are so well known that it is unnecessary to give any details.

The conversion of cellulose to alcohol has been a fascinating problem, and many methods have been adopted. Treatment of sawdust with sulphuric acid under the old Classen process, and with sulphurous acid under suitable conditions resulted in small yields of fermentable sugars. By the use of hydrochloric acid, Wiltstatter, and later Prodor, were able to increase the yield of sugars considerably, but at the same time were compelled to use very large amounts of the acid, the recovery of which presented very many technical difficulties.

The latest and most successful process is that worked out by Classen, in which cellulosic materials, such as wood sawdust, are treated with comparatively small amounts of hydrochloric acid in presence of suitable catalysts. By proper regulation of the conditions of the process it has been shown that the fermentable sugars obtained from wood approaches very closely the theoretical amount. This marks a very great development in the production of alcohol, for to obtain sixty-two per cent. of reducing sugars from wood waste is in itself a very remarkable achievement. A commercial plant is now almost completed, and the results from this are awaited with considerable interest.

The Classen Catalytic process is therefore a great advance on all previous work. It is unlimited in its application, and whereas at the moment many cellulosic materials are simply waste products, yet in the near future they will be converted cheaply and very profitably into alcohol. It will be a simple matter to convert straw, sawdust, waste wood, bamboos and tropical vegetation of many types into this product instead of simply destroying them by burning.

Now that cheap alcohol is within measurable distance of being manufactured, it cannot be long before there will be a plentiful supply of cheap fuel. This fuel can be produced almost anywhere at prices which will compare favourably with those of petroleum. It must be mentioned again that alcohol by itself is incapable of functioning to the best advantage in an ordinary petrol engine, but this difficulty is very easily overcome.

It is a simple matter to convert alcohol into ether at a low cost, and a very considerable amount of work has been done on mixtures of alcohol and ether for use as fuel for the ordinary petrol engine. Of the many mixtures that have been brought before the public the only one which has withstood the test of time is Natalite. This is essentially a mixture of alcohol and ether combined with small amounts of other substances. This fuel has long passed the experimental stage, and is being manufactured, in suitable places, in considerable amounts. It compares very favourably with petrol, and, indeed, can replace petrol in any petrol engine. It is probably the best fuel from a point of view of absence of "knocking," and an engine using this fuel will start up very much more easily, run better, and with total absence of knock, pull better on a hill, and use very much less lubricating oil than if petrol were used. It is no new experimental mixture, but is one of which many millions of gallons are being sold annually in various countries.

Natalite can be mixed with petrol, and an important property of it is that it enables a very low grade petrol to be utilised with most satisfactory results.

Alcohol therefore provides a very important product from the point of view of cheap power—an all-important thing for world development, and particularly for national defence. Produced as it is from almost an unlimited number of sources, it can of itself, when converted to ether and suitably mixed, furnish a self-contained fuel and at the same time, if such a fuel is blended with low grade petrols, a distinct step will be made to economise on the world's supply of petroleum. Such properties as these must give alcohol a very important place in the all-vital question of conservation of the world's power resources.

In conclusion, it must be pointed out that there is one difficulty about its general adoption. It is a difficulty which to some extent has already been overcome, and as the world becomes more used to the idea of alcohol fuels, this difficulty will disappear. Alcohol for human consumption is subject to very heavy excise restrictions and duties, and in order to protect the revenue of a country, and to prevent the illicit use of power alcohol for drinking and other purposes, it has to be treated in special ways. The process of denaturing alcohol is one which has been studied very carefully, and it is confidently anticipated that the present very stringent regulations will be considerably relaxed when the value of alcohol as a factor in national defence and development is fully realised.

CORRESPONDENCE

[Correspondence is invited on subjects which have been dealt with in the JOURNAL, or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, and publication of letters will be dependent on the space available in each number of the JOURNAL.—ED.]

CHARTING OF THE UPPER AIR.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

Sir,—Admiral Sir William Henderson in his letter in the February JOURNAL raises certain questions relative to my article "Charting of the Upper Air," which appeared in the November number.

In his first question he asks if the information as to the circulation of the atmosphere over the continents is authoritative, and where it may be found.

During the last twenty years, most meteorological services have investigated the currents of the upper air over their respective areas, chiefly by balloon and mountain observations. The results of the work are to be found in many different publications, which may, in some cases, be difficult to consult, but the information exists, and gives a good idea of the circulation over the continents. The upper circulation can also be obtained by a study of the pressure at the surface and the changes of temperature with height; by this means Sir Napier Shaw, F.R.S., in his book, "Air and its Ways" (1923) gives charts of mean pressure distribution at the surface and at 4,000 and 8,000 metres.

As the average wind at any level follows the average pressure distribution at that level, these charts will also give the average wind circulation at the surface and at 4,000 and 8,000 metres. The data for such charts are plentiful over the land, but much more investigation is required over the sea.

Admiral Henderson doubts the practical possibility of obtaining by observation charts of the mean winds at different levels. When one remembers the tremendous amount of meteorological data for the surface which has been accumulated from all parts of the world, mainly by voluntary effort, I see no reason to doubt that the upper winds can also be investigated, and charts prepared from the data obtained especially as it is not intended to extend them to extremely high levels, but rather to restrict them to levels which are most important to air navigation. These charts are required for other purposes, apart from all consideration of commercial flying, and the co-operation of the Navy is already assured in obtaining them.

The meteorologist is well aware that the charts he draws of mean conditions are not charts of actual conditions at all times, but the variations which occur in reality are only variations from the mean conditions. It is true that such charts are of more value in low than high latitudes. In this country the winds and weather are highly variable, but in lower latitudes there are wide regions where conditions change little from day to day; in these regions the charts would indicate with reasonable certainty the conditions to be anticipated along a given route.

I think that Admiral Henderson in his use of the word "stability" refers to the continuity of wind without change. If this is the case, I would say that there is

no reason to suppose that the winds in the higher levels in the Trades are less stable than those at the surface, the absence of surface friction between air and ocean would tend to make them more stable.

Admiral Henderson appears to think that a scheme for providing such W/T warnings to aircraft of every pocket disturbance or electrical storm as will make charts of mean conditions valueless, is proposed. Such a scheme would require a closer network of observations than has yet been suggested by any meteorological service, and far closer than the network demanded by the scheme put forward in my article.

Yours, etc.,

L. G. GARBETT,
Commander, R.N. (Retired).

AIRSHIP NAVIGATION.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—With reference to the discussion which took place after Air Vice-Marshal Sir Sefton Brancker's lecture on "Air Communication," and Commander Acworth's contention as to the disabilities under which airships navigate, the following considerations bear on this question :—

1. Depressions deep enough to produce high wind speeds are sharply defined and, therefore, certain to be known by the Meteorological Service sufficiently long in advance to allow the airship captain so to shape his course as to benefit by the depression rather than be greatly delayed by it.
2. In almost every case where there is a wind speed of, say, fifty knots, there is, within 100 miles, a region in which wind speed is less than half the maximum, or one in which the wind is in the opposite direction.
3. An airship, which will normally make long passages, has better opportunity than other aircraft of taking advantage of meteorological conditions in this way.
4. In the particular case when high wind speed exists over the base at which the airship is to land, there will, admittedly, be delay, but not longer than would be experienced in berthing a liner under similar conditions.

Yours etc.,

T. R. CAVE-BROWNE-CAVE,
Wing Commander.

CERTAIN ASPECTS OF AIR DEFENCE.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—The issue of the February number of our JOURNAL allows of a more careful consideration of the lecture given by Group-Captain W. MacNeece on 4th November last.

On page 95, line 1, the lecturer states that "the very term, 'air defence,' necessarily calls up the idea of *invasion*." He goes on to speak of "air *invasion*," of "external *invasion*," that "the sea in the future cannot save us from *invasion*." See page 95, lines 13-14 and 42. On page 96, line 7, reference is made to land "*invasion*." And on line 17 he speaks of "the *invasion* to which we must accustom ourselves." So far he has not disclosed his method.

On page 96, line 23, we are told that "the *invasion* which will be a daily, and probably a nightly, occurrence for certainly a few days, in the event of future wars will be a drastic visitation of which the worst of the *air raids* during the last war must necessarily have been but the veriest foretaste." On line 39 we read "the first and greatest *raid* of the war will be under way."

On page 97, line 41, we are told of "air *invasion*" reaching its maximum intensity at the very outbreak of war.

On page 98 we read of the opinion of Marshal Foch on "air *attack*."

On page 99, lines 12, 13, mention is made of "attacking the enemy aircraft on their *raids*."

So here we have a something, which may for convenience be termed an "air effort," which, it is claimed, can *invade* these islands. The "invasion" is to develop its maximum at the very outbreak of war. It is to be periodical "day and night" for certainly the first few days. But it sometimes becomes a *raid*, as quoted above.

Now it is put forward that, as generally accepted, the term "invasion" is used to denote an occupation of territory, and that of a permanent or semi-permanent nature. And it is this very "permanency" that differentiates "invasions" from "incursions" or "raids." It is this lack of "permanency" that prevents complete control, and hence, it is suggested, the term "invasion" is not applicable to surface craft—or any seacraft—maybe. But is it applicable to aircraft? Is it claimed that aircraft can permanently occupy either territory, or the air above, so as to control?

The lecturer speaks of attacks by day, and probably by night for certainly a few days. Is this "invasion" as generally understood?

It is suggested that the statements made, and the claims put forward, need to be reconsidered. If this "air effort" is, in the eye of the lecturer, an "invasion," then it would seem that he is using the term in a new way.

If, as seems probable from the lecture,—see page 96, line 39, and page 99, line 13—we are concerned with a "raid"—a raid on a gigantic scale, but still lacking the permanency of an invasion—then it seems a pity to make the claim.

Yours, etc.,

DAVID NORRIS,

Rear-Admiral.

PROMOTION BY MERIT IN THE ARMY.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—A limited system of promotion by merit has been agreed to by most people as being desirable, if it was not for the fact that friction and unintentional favouritism almost inevitably creeps in.

The following system, which I have not yet seen suggested in the columns of the JOURNAL, might therefore be considered, as it provides partial promotion by merit, and at the same time seems to reduce friction and possibility of favouritism to a minimum.

We will call it a "System of Acting Ranks," and it would work on the following lines:—

When an officer is given an extra-regimental appointment he would, as now, be seconded.

Instead of promoting substantively the next senior officer to fill his place, an officer would be *selected* from among all the officers of the next junior rank who have qualified for promotion, and be granted the *acting rank and pay* of that place.

When the original, or any other officer of the same substantive rank is restored to establishment from the seconded list, the officer with the acting rank returns to his permanent grade.

As regards substantive promotion :—

Normally when a vacancy occurs in the rank, e.g., of captain, the senior lieutenant would be promoted, but if there is any lieutenant in the unit whose service in the acting rank of captain totals two or more years, he *must* be promoted to the next vacancy, if necessary over the heads of his seniors.

If there is more than one officer in such a category, the officer who was first to complete his two years in the acting rank would take priority.

Such a system seems to have a number of advantages :—

- (a) There is likely to be far less feeling about a junior officer being appointed over the heads of his seniors to an *acting* rank than there would be if the same officer was promoted in acceleration to the substantive rank straight away.

Acting promotion, often over the heads of seniors, was given during the last war with good results and with little friction.

- (b) An officer would have two years trial acting in the more senior rank before he definitely passes over the heads of his brother officers. By that time his suitability for accelerated promotion to the senior rank would be proved conclusively to his Commanding Officer and the world at large, and further, his brother officers would already be accustomed to thinking him of senior rank, so that his substantive promotion over their heads would not cause an undue amount of ill-feeling.

- (c) It eases the situation for the Commanding Officer. Firstly it is much easier to recommend a junior officer for acting rank, with the knowledge that he will have at least two years' trial before he is substantiated, than it is to recommend the same officer for accelerated substantive promotion straight away.

After the two years has elapsed substantive promotion works automatically.

Of course, a Commanding Officer would have great responsibility in seeing that officers, whom after trial are not considered to be suitable for accelerated substantive promotion, do not complete two years in acting rank.

- (d) It gives the keen and capable officer, even if not finally selected for accelerated substantive promotion, a chance of getting extra pay while acting in the more senior rank ; and if he is finally selected he gets an increase in seniority.

- (e) It tends to economy. At present, when an officer returns from the seconded list, he is being fully paid, but often cannot be absorbed into the establishment for some time, so that there are two people being paid when there should be only one.

In the "System of Acting Ranks," when an officer returns from the seconded list, he is absorbed immediately, and the officer with acting rank is reverted to his permanent grade.

The danger under this system of officers seeking Staff appointments which carry acting rank, for the purpose of qualifying for accelerated promotion, could be avoided by ruling that only officers substantively holding the necessary rank are to be employed on Staff appointments, except in the cases of officers who have passed the Staff College.

This would ensure that officers (excepting those who have p.s.c.) could only qualify for accelerated promotion by Regimental Service. If it were otherwise, the prestige of the Staff would be lowered.

In time of war, when officers with the necessary substantive rank and qualifications would be insufficient to meet the demands of an increased Staff, and non-p.s.c. officers have to be appointed to the Staff with acting rank, a rule could be made that acting rank on the Staff counted only half that in Regimental Service.

Yours, etc.,

A. de L. CAZENOVE,

Captain, Coldstream Guards.

ENGINEERS AND THE ARMY.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—After reading the lecture delivered by Major-General H. F. Thuillier, C.B., C.M.G., on "Engineers and the Army," in the issue of the JOURNAL of November, 1925, I have been struck by what appears to me to be an important omission.

The chief point of the lecture and subsequent discussion is the imperative need of co-operation on the part of R.E. officers with the rest of the Army. The lecturer mentioned the Staff College course as valuable to foster this, but pointed out that comparatively few R.E. officers were fortunate enough to undergo it.

What about the Senior Officers' School, which all R.E. officers have to attend to undergo the same tactical and administrative training as all other combatant officers before promotion to the rank of Lieut.-Colonel? The objects of the School are set out fully in King's Regulations, para 815, and will repay reference in connection with this subject. It is true this course comes towards the end rather than the beginning of their service, but surely the effect of it must be that with this in front of them all their military life, R.E. officers will take care to keep in touch with other arms, so that when they come up for this course they will not find themselves rusty and out of date in tactical matters.

I know this is how it is working out in India, where the Senior Officers' School at Belgaum make a particular point of the co-operation of all arms, and during the three months in which R.E. officers live in mess with officers of all arms, much is done to revive and renew old acquaintances, and foster the co-operative spirit. I imagine this applies also to the "parent" school at Sheerness.

Yours, etc.,

EDGAR W. BRIGHTEN,

Bt. Lieut.-Colonel.

The Beds. & Herts. Regt.

Belgaum, India.

18th January, 1926.

"FULL CIRCLE GOES THE WHEEL."

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I have read with great interest Major Eady's entertaining article, "Full Circle Goes the Wheel." I suspect it, both from title and subject, of being in the nature of a reply to my study, "The Wheel has come Full Circle," in the "English Review" for last July. I agree that the ancient war elephant has a claim, as well as the knight in armour, to be considered among the prototypes of the Tank. But the moral he seeks to draw from this parallel is a trifle impaired by a breach of historical sequence. He gives us an eloquent description of how

the Romans, against Pyrrhus in 280 B.C., found the antidote to the "tank" elephant, yet earlier in his own article we note that twenty-four years later this antidote did not work. For it was in 256 B.C. that, as he aptly says, there was waged the elephant battle of Cambrai, when the Roman legions of Regulus were destroyed—because the Carthaginians had imported a general, Xanthippus, who gauged the inherent strength and limitations of the elephants, and employed them accordingly.

I am somewhat surprised, too, that Major Eady does not include the Battle of Zama in his historical survey, for here, surely, was the most famous appearance—and disappearance—of the war elephant. Their employment by Hannibal and countering by Scipio, throw into apt relief the merits and defects of this ancient weapon. Instead of adopting the usual chequer formation, with the maniples of the second line covering the intervals between those of the first, Scipio ranged the maniples of each cohort directly in rear of each other, so leaving "through" lanes between each cohort.

Then, upon the onset of the Carthaginian elephants, Scipio greeted them with a synchronized blare of trumpets along his line. Startled and terrified, many of the elephants turned tail, and the others took the line of least resistance, rushing straight through the lanes harmlessly, rather than face the raucous and firm-knit ranks of the legionaries. Yet if Scipio, the world's greatest artist in tactical "boomerangs," here trumped his opponent's ace, the destructive power of the elephants was shown in the havoc they wrought among his *velites* before reaching his main line. And that Scipio, at least, did not underrate the power of this weapon is shown by the emphatic clause in his subsequent peace treaty with Carthage, whereby the Carthaginians were to give up all their elephants and bind themselves not to tame any more. The means of his salvation at Zama had been the aural "soft spot" in the "living tank," and his own skill in exploiting it. This is where the analogy between the war elephant and the modern tank breaks down—for even the worst regimental band will hardly avail to stop the attack of enemy tanks.

Yours etc.,

B. H. LIDDELL HART,
Captain.

CROSSING OF RIVERS IN WARFARE.

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

DEAR SIR,—It may be of service to those who heard or read Colonel Bernard's excellent lecture, to remind them of the passage of the Ajua on the 20th/21st December, 1917, in Palestine. This furnishes an excellent example of a surprise where it was not possible to divert the enemy's attention to a false crossing, and where some low heights gave the enemy the advantage of superior observation in the daytime. Moreover, the British approach was over swampy and, accordingly, almost impassable ground. An attempt to secure the river crossings had been made on the 24th of November, but had failed; the British force which had succeeded in crossing being extricated with difficulty.

The Ajua, a perennial stream, flows from the east with many windings through a gently undulating country until it reaches the sea about three miles north of Jaffa. After flowing behind the Turkish position at this time, it emerged in front of it for the last five miles of its course. On either bank, and especially on the southern, stretch flats of black cotton soil, about 800 yards wide, which, after rain, are transformed into swamps. Running southward to within 500 yards of

the north bank are two parallel village-crowned ridges, which end abruptly, and give excellent observation of both banks of the river. Apart from a few gardens and orange groves, all of which could be searched with fire, the flats presented a coverless area, which defenders on the northern bank could sweep from end to end at the easiest ranges. After the river emerged from behind the Turkish lines, it had three possible fording places—two mill-dams, one with a bridge, and all partially demolished; the third being an erratic ford where the river cuts across the sea-beach. The Turkish artillery had all of these ranged to a yard. The British were superior in artillery, but, even so, with a very modest force of machine-guns and riflemen, and with well-concealed artillery, the Turks could have inflicted extremely heavy losses on any British force attempting to cross in a deliberate attack without surprise.

As matters stood, the Turkish guns could easily shell the roadstead of Jaffa, and it was urgent that they should be driven up the coast.

The possibilities of effecting a surprise seemed so small that H.Q. 21st Corps, which was in the coastal sector in December, 1917, planned a deliberate attack, to include a twenty-four hour military and naval bombardment of the enemy positions, an attempt to bridge the Auja by night, and an attack on the following day by the 52nd, 54th and 75th divisions. However, Major-General J. Hill, of the 52nd Division, came forward with a scheme for a surprise night attack. H.Q. 21st Corps thought success so unlikely that, although the attempt was sanctioned, it was on the understanding that, if it failed, the 52nd Division was to be prepared to take its place in the regular Corps attack planned to commence on the following day.

By most careful concealment the element of surprise was made to outweigh the difficulties of the undertaking. Despite a back area containing many probable spies, and miles of swamps and other natural difficulties, the bridging material and boats were made, the troops were exercised in their use, and everything necessary was transported to hiding places close to the river banks unknown to the enemy. Suitable crossing places were found, two of them well clear of the mill-dams and one at the river mouth; temporary roads were made over the swampy ground on the night of the crossing; delays caused by the bad weather necessitated a change in all times whilst the operation was in progress; the river was in flood; but every crossing was successful, the surprise was complete, and all of the Turkish positions immediately north of the Auja were in the hands of the 52nd Division at a cost of less than a hundred casualties. General Hill had asked for cavalry with which to follow up his crossing of the river. Unfortunately 21st Corps H.Q. refused his request, and guns, which the infantry nearly captured, escaped. The infantry did capture a number of Turkish limbers.

On the two days that followed, the 52nd and 54th advanced on a wide front until the left flank of the former was seven miles north of the mouth of the Auja. After this, the Jaffa roadstead was practically immune from shell fire.

Further details of this operation can be obtained from "The Fifty-Second (Lowland) Division, 1914-18," Thompson; and "An Outline of the Egyptian and Palestine Campaigns," Major-General M. G. E. Bowman-Manifold. W. T. Massey's "How Jerusalem was Won" is a most interesting book, but, in my own estimation, at any rate, contains numerous mistakes, possibly attributable to the strenuous circumstances under which it came to be written.

Yours, etc.,

McGill University,
Montreal, Canada.

ROBERT R. THOMPSON,
Lieut.-Colonel (Canadian Militia).

NAVY NOTES

GREAT BRITAIN.

THE NAVY ESTIMATES.

The statement of the First Lord of the Admiralty explanatory of the Navy Estimates for 1926-1927, was issued on 27th February, some days in advance of the Estimates themselves. (Cmd. 2595). Mr. Bridgeman stated that the net total is £58,100,000, a reduction of £2,400,100 on the Estimates for 1925-1926, notwithstanding that the provision for new construction is increased from £7,235,737 to £9,083,693. The reduction in spite of this and other upward tendencies is due to the important decisions taken by the Admiralty in the last nine months with a view to economy. Economies of upwards of £5,000,000 have been rendered possible by the adoption of a settled programme of new construction over a period of years, and by the favourable aspect of the political horizon. But for this, the First Lord would have been obliged to ask Parliament for a net total of some £63,000,000.

NOTES ON NAVY PROGRESS.—A series of "Notes on Matters of General Interest" opens with a review of the changes in Fleet distribution made from motives of economy, and already announced in the JOURNAL. Co-operation with the Dominions and India; the return of the Rhine Flotilla; exchanges of visits between the Fishery Patrol and Fishery Protection Services of other nations; additional protection of British interests in China; prevention of slave traffic in the Red Sea; and the cruise of H.M.S. "Repulse" with the Prince of Wales are other matters referred to. In regard to Fleet training, the First Lord says: "In spite of the reductions which it has been necessary to make in the numerical strength of the principal Fleets, mainly among the smaller vessels, and also in spite of increased economy in the use of fuel, every effort has been made to continue the tactical training of the Fleet in as realistic a manner as numbers allow, and to keep pace with modifications and improvements in weapons and design." The need for economy will prohibit any mobilization and exercise of the Reserve Fleet during 1926.

FLEET PERSONNEL.—The personnel of the Fleet amounts to 102,675, the same as last year. Owing to the large economies made, the numbers now included in vote "A" will provide crews for all new construction up to and including the 1925 programme. It is proposed to recommence the entry of a few short-service seamen this year. Lack of recruits for the medical branch of the fighting Services has led to an Inter-Departmental Committee, under the presidency of Sir Warren Fisher, G.C.B., being set up to consider rates of pay and matters ancillary thereto. Promotion from the lower deck has now been resumed in all branches. Six promotions to boatswain were made on 1st January, 1926. A simpler scheme of efficiency assessments, based solely upon efficiency in a man's substantive rating, will come into force on 31st May next. In consequence of the difficulty in finding accommodation afloat for seaman-class boys and young ordinary seamen, arrangements have been made for about 500 of these to be accommodated at Port Edgar,

where they are trained for able seaman in the barracks and vessels of the destroyer flotilla stationed at that port.

NEW CONSTRUCTION.—On this subject, the First Lord states that the Estimates provide for carrying on the programme laid before Parliament last July. It was originally intended that the floating dock for Singapore, included in this programme, should be provided by the reconstruction of an ex-German dock, but experience has shown this to be impracticable, and a new dock is accordingly being ordered. The 1926 programme includes provision for commencing work on the following ships :—2 "A" class cruisers, 1 "B" class cruiser, 6 "O" class submarines, 1 submarine depot ship, 1 repair ship, and 4 motor launches. One "A" class cruiser and one submarine will be built in the Dockyards, the construction of the remaining vessels being put out to contract. The minelayer "Adventure," submarines "O.1" and "L.26," and the destroyers "Amazon" and "Ambuscade" are to be completed during the financial year 1926-27. One of the "King George V" class of battleship, to be taken in hand for scrapping at the end of 1926, will be converted into a target ship to replace the "Agamemnon." On April 3rd, it was announced that the vessel selected for this purpose would be the "Centurion," the cruiser "Weymouth" relieving her as flagship of the Vice-Admiral Commanding Reserve Fleet.

THE ADMIRALTY BOARD.

Members of the Board of Admiralty timed their annual inspection of the dockyard and naval establishments at Portsmouth to coincide with the launch of H.M.S. "Suffolk," the first post-war cruiser, on 16th February. The Admiralty yacht "Enchantress" was used during the week of the Board's visit, being commissioned temporarily on 8th February, with a special Portsmouth crew as an independent command, by Commander V. S. Butler, D.S.O., with accounts carried out in the "Victory." The yacht reduced again to a care and maintenance basis on 20th February. Lieut.-Commander L. C. A. St. J. Curzon-Howe was appointed Flag Lieut.-Commander to the Board of Admiralty for the visit.

THE FLAG LIST.

PROMOTIONS AND RETIREMENTS.—After a period of three months, from the end of November to the end of February, during which no changes took place on the Flag List, a run of advancement, giving steps in rank to twelve officers, was brought about in the first week of March by the decision of three Admirals to retire voluntarily, thereby facilitating the promotion of junior officers. The list is as follows :—

Admiral Sir William C. Pakenham, G.C.B., K.C.M.G., K.C.V.O., is placed on the retired list at his own request, to date March 1st, 1926; Admiral Sir Douglas R. L. Nicholson, K.C.M.G., K.C.V.O., is placed on the retired list at his own request, to date March 1st, 1926; Admiral Sir George P. W. Hope, K.C.B., K.C.M.G., is placed on the retired list at his own request, to date March 2nd, 1926, and in consequence, Vice-Admiral (Acting Admiral) Sir Roger J. B. Keyes, Bt., K.C.B., K.C.V.O., C.M.G., D.S.O., LL.D., D.C.L., is promoted to be Admiral in his Majesty's Fleet, to date March 1st, 1926; Vice-Admiral Sir Hugh H. D. Tothill, K.C.B., K.C.M.G., K.C.V.O., is promoted to be Admiral in His Majesty's Fleet, to date March 1st, 1926; Vice-Admiral the Hon. Sir Victor A. Stanley, K.C.B., M.V.O., is promoted to be Admiral in his Majesty's Fleet, to date March 2nd, 1926; Rear-Admiral Sir Alfred E. M. Chatfield, K.C.B., K.C.M.G., C.V.O., is promoted to be

Vice-Admiral in his Majesty's Fleet, to date March 1st, 1926; Rear-Admiral Charles D. Johnson, C.B., D.S.O., M.V.O., is promoted to be Vice-Admiral in his Majesty's Fleet, to date March 1st, 1926; Rear-Admiral Arthur A. M. Duff, C.B., is promoted to be Vice-Admiral in his Majesty's Fleet, to date March 2nd, 1926; Captain Frederick P. Loder-Symonds, C.M.G., A.D.C., R.N., is promoted to be Rear-Admiral in his Majesty's Fleet, to date March 1st, 1926; Captain (Commodore 2nd Class) Alfred D. P. R. Pound, C.B., A.D.C., R.N., is promoted to be Rear-Admiral in his Majesty's Fleet, to date March 1st, 1926; Captain Charles W. R. Royds, C.M.G., A.D.C., R.N., is promoted to be Rear-Admiral in his Majesty's Fleet, to date March 2nd, 1926; Vice-Admiral Charles D. Johnson, C.B., D.S.O., M.V.O., is placed on the retired list, to date March 2nd, 1926, and in consequence, Rear-Admiral Hugh F. P. Sinclair, C.B., is promoted to be Vice-Admiral in his Majesty's Fleet, to date March 2nd, 1926; Captain Leonard A. B. Donaldson, C.B., C.M.G., A.D.C., R.N., is promoted to be Rear-Admiral in his Majesty's Fleet, to date March 2nd, 1926; Rear-Admiral Frederick P. Loder-Symonds, C.M.G., is placed on the retired list, to date March 2nd, 1926, and in consequence, Captain Hugh J. Tweedie, C.B., A.D.C., R.N., is promoted to be Rear-Admiral in his Majesty's Fleet, to date March 2nd, 1926; Rear-Admiral Charles W. R. Royds, C.M.G., is placed on the retired list at his own request, to date March 3rd, 1926; in accordance with the decision to reduce gradually the Flag List, no promotion will be made in consequence of this retirement.

On May 1st, Vice-Admiral Hugh F. P. Sinclair, C.B., retired at his own request, in order to facilitate the promotion of junior officers. In consequence, Rear-Admiral Sir Maurice S. FitzMaurice, K.C.V.O., C.B., C.M.G., was promoted to be Vice-Admiral; and Captain Eric J. A. Fullerton, C.B., D.S.O., M.A., A.D.C., to be Rear-Admiral, both to date May 1st.

NEW APPOINTMENTS.—It was announced on 20th February that the King had approved the appointment of Vice-Admiral Sir Walter Cowan, Bt., K.C.B., D.S.O., M.V.O., to be Commander-in-Chief of the North America and West Indies Station, in succession to Vice-Admiral Sir James Fergusson, K.C.B., K.C.M.G., to date June 1st. Sir Walter Cowan had been Commanding Officer on the Coast of Scotland, and Admiral-Superintendent of the Dockyard at Rosyth, since 30th June, 1925. No successor to him in this post was announced.

The selection was announced in February also of Rear-Admiral Roger R. C. Backhouse, C.B., C.M.G., to be Rear-Admiral Commanding the Third Battle Squadron, Atlantic Fleet, in succession to Rear-Admiral F. H. Mitchell, C.B., D.S.O., to date May 5th. Rear-Admiral Backhouse was promoted on April 3rd, 1925, and has since taken the Senior Officers' Technical and War Courses. The changes caused by the withdrawal of the "Iron Duke" class of battleships from the Mediterranean for training duties in the Atlantic are recorded under Organization and Distribution.

In March the appointment was announced of Rear-Admiral H. W. Parker, C.B., C.M.G., to be Director of Naval Equipment, in succession to Vice-Admiral Arthur A. M. Duff, C.B., to date May 17th. Rear-Admiral Parker had been promoted to flag rank in January, 1925, before which he was in command of the battle cruiser "Repulse."

DEATHS OF FLAG OFFICERS.—The obituary list of officers during the quarter included several retired Flag Officers. Among them was Admiral Sir Ernest

Troubridge, K.C.M.G., C.B., M.V.O., who died suddenly from heart failure at Biarritz on 28th January. Admiral Sir John Franklin Parry, K.C.B., who was Hydrographer of the Navy from 1914 to 1919, died at Harrogate on 21st April. Admirals Sir James E. C. Goodrich, K.C.V.O., F. C. M. Noel, H. M. T. Tudor, N. E. Palmer, and William Marrack have also passed away.

TRINITY HOUSE DEPUTY MASTER.—Vice-Admiral George Robert Mansell, C.B.E., M.V.O., has been elected Deputy Master of the Corporation of Trinity House, in place of the late Captain Sir H. Acton Blake, K.C.M.G., K.C.V.O., R.N.R., who died at sea on 7th March. Vice-Admiral Mansell had been an Elder Brother of Trinity House since March, 1912, when he retired from the Royal Navy.

PERSONNEL.

NEW A.D.C.'s TO H.M. THE KING.—On March 23rd the appointment was announced of Captain O. E. Leggett, C.B., Engineer-Captain E. P. St. J. Benn, and Captain H. W. W. Hope, C.B., C.V.O., D.S.O., to be A.D.C.'s from 2nd March, in place of Captains C. W. R. Royds, L. A. B. Donaldson, and H. J. Tweedie, promoted to flag rank. This is the first occasion on which an engineer officer has received this honour. Engineer-Captain Benn is in command of the R.N. Engineering College at Keyham.

COURSES AT ARMY SCHOOLS.—An Admiralty Order states that the Army Council have reserved the following vacancies for Naval Officers for courses at Army Schools during the year 1926:—

<i>School and Date of Course.</i>	<i>No. of</i>	<i>Remarks.</i>
<i>Senior Officers' School, Sheerness.</i>	<i>Vacancies.</i>	
15th February to 14th May	2	This course is intended for Junior
25th May to 20th August	2	Captains. Applications to under-
21st September to 18th December ..	2	go the course should be made
		to the Secretary of the Admir-
		alty through the usual channels.
<i>Small Arms School, Hythe.</i>		
Long Qualifying Course—		
19th July to 24th September	1	Officer to be nominated by the
		Captain, H.M.S. "Excellent."
<i>School of Anti-Aircraft Defence, Biggin</i>		
<i>Hill, near Westerham.</i>		One officer to be nominated as
		follows, by—
5th to 7th April	1	Commanding Officer, Coast of
		Scotland.
12th to 14th April	1	Commander-in-Chief, The Nore.
17th to 19th May	1	Commander-in-Chief, Portsmouth.
7th to 9th June	1	Commander-in-Chief, Devonport.
18th to 20th October	1	Commanding Officer, Coast of
		Scotland.
		<i>Note.</i> —Nominations are to be for-
		warded to the Secretary of the
		Admiralty at least one month
		before the courses are due to
		commence.

*School of Artillery, Larkhill Camp,
Salisbury Plain.*

Flash Spotting and Sound Ranging 25th October to 4th December ..	I	Officer to be nominated by Captain H.M.S. "Excellent."
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*Army School of Physical Training,
Aldershot.*

(Advanced Course), three months'
duration—

Commence 27th April	I	
Courses in boxing, wrestling, bayonet fencing and sports, including refereeing and judging (six weeks' duration).		Officer to be nominated by the Director of Physical Training and Sports.
Commence 27th April	I	
Commence 15th June	I	

ENGINEER OFFICERS AMALGAMATED.—On or after February 1st, 1926, all promotion of engineer officers to the equivalent rank of Lieutenant are to be to the rank of Lieutenant (E). Any subsequent promotions of officers so promoted will be to Lieut.-Commander (E), Commander (E), etc. This means the gradual elimination of the ranks of Engineer Lieutenant and above. The last engineer officers of the old separate entry are now Engineer Lieut.-Commanders of 1920 seniority. The Engineer Lieut.-Commanders of later seniority, and all the Engineer Lieutenants are those promoted from the lower deck or transferred from the R.N.R. It has been a subject of comment recently that whereas Mates on promotion are made Lieutenants on the same list as those from cadets, Mates (E) have been promoted to Engineer Lieutenant, and so kept separate from the Lieutenants (E) trained from cadets. In future, there will be only one list for all.

NAVAL HISTORY ESSAY COMPETITION, 1925 (RESULTS).—The undermentioned Officers have been awarded prizes, as shown below, on the result of the Annual Examination in Naval History for the year 1925:—

Lieut. K. H. S. Cohen, R.N., H.M.S. "Ajax": £50, Medal and a Certificate of Merit.

Lieut. H. E. Guerrier, R.N., H.M.S. "Furious": £30 and a Certificate of Merit.

Lieut. D. O. Doble, R.N., H.M.S. "Queen Elizabeth": £20 and a Certificate of Merit.

Lieut. R. W. Brock, R.N.: £10 and a Certificate of Merit.

Lieut. J. R. Henderson, R.N.: £10 and a Certificate of Merit.

Lieut. T. J. N. Hilken, R.N., H.M.S. "Emperor of India": £10 and a Certificate of Merit.

Lieut. R. T. C. Woods, R.N.: £5 and a Certificate of Merit.

Lieut. G. Barnard, R.N., H.M.S. "Valiant": £5 and a Certificate of Merit.

GOODENOUGH MEMORIAL PRIZE, 1925.—The Goodenough Memorial Prize for the year 1925 has been awarded to Sub-Lieutenant E. K. Le Mesurier, R.N., H.M.S. "Revenge."

BEAUFORT AND WHARTON TESTIMONIALS.—The Beaufort and Wharton Testimonials for 1925 have been awarded to Lieutenant R. S. Warne, R.N., H.M.S. "Dolphin."

CADETS' NEW TRAINING SHIP.—The monitor "Erebus," hitherto turret drillship at the Nore, has been exchanged with the "Marshal Soult," drillship at Devonport, and in September is to take over the duties of the "Thunderer" as training ship for special entry Naval Cadets and for Paymaster Cadets. The "Erebus" became a tender to the "Thunderer" as from 5th March, in order that the Senior Officer, Reserve Fleet, Devonport, might be in a position to organize and superintend the work of fitting out the former as training ship for Cadets.

SHORT-SERVICE SEAMEN.—The re-introduction of short service, for seamen in the Royal Navy was officially announced on 12th March, following a reference to the matter in the First Lord's memorandum. Recruiting began on 1st April, 1926. The periods of service are different from those formerly in operation, viz., seven years in the Fleet and five in the Reserve, instead of five and seven years respectively. Rates of pay on entry will be the same as for continuous service men, but on being rated up to A.B. and leading seamen (the highest to which a short-service man can rise without transfer to continuous service), the rates of pay will be those laid down for N.C.S. men, i.e., about 6d. a day less. The short-service men will receive six months' training in depot.

SALT PORK RATION WITHDRAWN.—An order of 19th February stated that salt pork has now been removed from the scale of rations for H.M. ships on all stations, and a ration of meat and vegetables (tinned) has been introduced as an alternative to corned beef, and its accompaniments, when issued as the dinner ration.

MATERIAL.

LAUNCH OF H.M.S. "SUFFOLK."—The first post-war cruiser built for the Royal Navy, apart from the special cruiser-minelayer "Adventure," took the water at Portsmouth on 16th February, when H.M.S. "Suffolk" was launched. The naming ceremony was performed by the Marchioness of Bristol, wife of Rear-Admiral the Marquess of Bristol, and the cruiser entered the water flying the Union flag and the flag of the Admiralty, members of the Board being present at the ceremony.

LAUNCH OF H.M. SHIPS "CORNWALL" AND "KENT."—A feature of the launching ceremony when the "Cornwall" was put afloat at Devonport Dockyard on 11th March, by Lady Clinton, was the broadcasting of the music, religious service, and other sounds. Five days later, on 16th March, the "Kent" was launched at Chatham by Lady Stanhope, wife of the Civil Lord of the Admiralty, on the same day that the "Cumberland" was put afloat at Barrow.

LAUNCH OF H.M. SHIPS "CUMBERLAND" AND "BERWICK."—On 16th March, H.M.S. "Cumberland," built by Messrs. Vickers, Ltd., was launched at Barrow, the naming ceremony being performed by the Dowager Countess of Carlisle. On 30th March, H.M.S. "Berwick," built by the Fairfield Company, was launched at Govan, the naming ceremony being performed by Lady Stirling Maxwell. With the launching of these two contract-built ships, all five of the 10,000-ton cruisers authorized in the Labour Government's programme of 1924, have been put afloat. They are to be completed in 1927.

1925 CRUISER CONTRACTS.—It was announced in February that the contracts for the second pair of cruisers of the 1925-26 programme had been awarded, one to Messrs. R. & W. Hawthorn, Leslie & Co., Ltd., of Newcastle-on-Tyne, and the other

to Messrs. William Beardmore & Co., Ltd., Dalmuir. These vessels will be named the "Shropshire" and the "Sussex." The two of the same programme to be built in the Royal Naval Dockyards are the "London," at Portsmouth, and the "Devonshire," at Devonport. The keel-plate of the "London" was laid on 22nd February, by Mrs. Thesiger, and that of the "Devonshire" on 16th March, by Mrs. Woolcombe, the wives of the Admirals-Superintendent at the respective yards.

FASTER DESTROYERS.—Details of the first British post-war destroyers, "Amazon" and "Ambuscade," are published in this year's official Return of Fleets. The "Amazon," of Thornycroft design, will be of 1,330 tons, and the "Ambuscade," designed by Messrs. Yarrow, of 1,210 tons. Both vessels will carry four 4.7 inch and seven 2-pounder and machine guns, and two triple torpedo tubes. They will be propelled by geared turbines, the boilers being fired by oil fuel only, and the speed will be thirty-seven knots, or one knot higher than any previous destroyer, and three knots higher than the standard "V" and "W" classes, forming the bulk of the existing British flotilla.

SUBMARINES COMPLETING.—Revised official figures for the tonnage of submarines "X.1" and "O.1" show that these vessels displace 2,525 and 1,345 tons on the surface respectively, and 3,600 and 1,750 tons when submerged. "X.1" is in commission as a unit of the Fifth Flotilla, tender to the "Dolphin," and "O.1" is to be completed on 31st December, 1926. The two submarines laid down for the Royal Australian Navy by Messrs. Vickers, Ltd., at Barrow, in 1925, will have a displacement of 1,400 tons, and are understood to be known provisionally as "A.O.1" and "A.O.2."

ORGANIZATION AND DISTRIBUTION.

TRANSFER OF THIRD BATTLE SQUADRON.—Consequent on the transfer of the battleships "Resolution" and "Royal Oak" to the Mediterranean, and the four "Iron Duke" class to the Atlantic Fleet, the following changes in flagships and the appointments of the flag officers concerned were approved. Vice-Admiral Sir Michael H. Hodges, K.C.B., C.M.G., M.V.O., has been appointed as Vice-Admiral Commanding First Battle Squadron and Vice-Admiral, Second in Command, Mediterranean Fleet, as from the date the transfers take place. The flag of Vice-Admiral Hodges will be transferred from H.M.S. "Iron Duke" to H.M.S. "Barham." The flag of Rear-Admiral C. M. Staveley, C.B., C.M.G., Rear-Admiral, First Battle Squadron, will be transferred from H.M.S. "Barham" to H.M.S. "Resolution." Rear-Admiral F. H. Mitchell, C.B., D.S.O., has been appointed Rear-Admiral Commanding Third Battle Squadron, Atlantic Fleet, as from the date the transfers take place. The flag of Rear-Admiral Mitchell will be transferred from H.M.S. "Resolution" to H.M.S. "Iron Duke."

ATLANTIC FLEET ADMINISTRATION.—Consequent also on the above transfer, and the abolition of the appointment of Rear-Admiral, Second Battle Squadron, the following vessels of the Atlantic Fleet came directly under the administration of the Commander-in-Chief, Atlantic Fleet, as from 22nd February, 1926:—"Revenge," "Ramillies," "Royal Sovereign," "Conquest," "Cyclops," "Princess Margaret," and First Submarine Flotilla.

MEDITERRANEAN FLAGSHIP CHANGE.—After having been in dockyard hands for a thorough overhaul at Portsmouth since November, 1924, the "Warspite"

was completed on 16th April. She was to have replaced the "Valiant" in the Mediterranean, but revised orders were issued for her to become flagship in the Mediterranean in place of the "Queen Elizabeth," which will pay off for a long refit during which she will be bulged. The "Warspite" was commissioned for this duty by Captain G. K. Chetwode, C.B., C.B.E., on 6th April.

CRUISERS FOR RELIEF.—The completion of the "Emerald" and "Enterprise," referred to in the last JOURNAL, enables the Admiralty to bring home from the East Indies Station the "Colombo" and "Cairo" respectively. The "Colombo" has been ordered to refit at Chatham, and will afterwards proceed to the North American Station to relieve the "Constance." The "Cairo" is to refit at Devonport in July, and then to proceed to the North American Station to relieve the "Curlew." The "Constance," on her return, will undergo large repairs at Chatham; the "Curlew" is to reduce to reserve at Portsmouth. The "Concord," relieved in China by the "Vindictive," is to refit at Devonport in May.

THE FLEET AIR ARM.

NEW NAVAL PILOTS.—Fleet orders on 5th February notified that the first course of naval officers specialising as pilots for the Fleet Air Arm had completed their deck-landing training, and had been appointed to Fleet Air Arm Flights for full flying duties. The Lords of the Admiralty desired to place on record their appreciation of the very satisfactory results obtained by the officers concerned.

AIRCRAFT CARRIERS.—H.M.S. "Furious" accompanied the Atlantic Fleet on the Spring Cruise. H.M.S. "Eagle" rejoined the Mediterranean Fleet in February, after refitting at Portsmouth, and H.M.S. "Hermes" rejoined that Fleet in March on return from the China Station, to which she had been detached.

H.M. SHIPS "GLORIOUS" AND "COURAGEOUS."—Owing to the closing down of Rosyth, the work of converting the cruiser "Glorious" into an aircraft-carrier is to be undertaken at Devonport, and the vessel left, in tow, for that port on 13th March. The approximate date for the completion of her sister-ship, the "Courageous," at Devonport, is March, 1928.

H.M.S. "VINDICTIVE."—Although classified as a cruiser, this ship takes the place of an aircraft-carrier on the China Station. She has now no "landing-on" deck, and would not, therefore, in any case, count as a carrier under the Washington Agreement, quite apart from the fact that her official displacement is only 9,750 tons. She is, however, the first sea-going British ship to be fitted with a catapult for launching her aircraft. In this respect we are much behind the United States Navy, which has had catapults in a number of their ships for some time.

ROYAL NAVAL RESERVE.

TRANSFERRED R.N.R. OFFICERS.—Officers transferred from the Royal Naval Reserve for meritorious services to permanent commissions in the Royal Navy under Article 82 (now 120) of the R.N.R. Officers' Regulations, will be allowed to count time served in the Royal Navy in the rank of Acting Sub-Lieutenant, R.N.R., or any higher rank, as naval service for purposes of promotion and retired pay under Naval Regulations.

SIGNALLING PRACTICE.—An increased number of signalling exercises between H.M. Ships and merchant vessels was notified in the quarterly returns up to 30th September, 1925. The total for this quarter of successful exercises was 2,027, as compared with 1,139, 1,648, and 1,582 for the three preceding quarters. The China Squadron was particularly active, first five places in order of merit being taken by the "Despatch," "Diomedé," "Bluebell," "Hawkins" and "Titania."

ROYAL NAVAL VOLUNTEER RESERVE.

THE SCOTTISH DIVISION.—This has recently been reconstituted as two separate divisions, viz., East Scottish Division, headquarters at Leith; Clyde Division, headquarters at Govan, Glasgow. Captain the Duke of Montrose, C.B., C.V.O., V.D., has been appointed to command the East Scottish Division, and Commander R. C. Primrose, V.D., will command the Clyde Division.

PETTY OFFICER INSTRUCTORS TO THE R.N.V.R.—These will in future be appointed from men who have actually been pensioned, instead of from those who are within twelve months of completing time for pension. Their emoluments and conditions of service are set forth in A.F.O. 564/26.

H.M.S. "PRESIDENT" has left her moorings in the Thames and been towed to Chatham for a refit. During her absence the headquarters of the London Division, R.N.V.R., will be the 1st City of London Drill Hall.

RE-UNION AND FAREWELL DINNER TO H.M.S. "EAGLET."—An Admiralty order stated that it had been arranged to hold the Annual Re-Union Dinner on board H.M.S. "Eaglet" (late H.M.S. "Eagle"), Salthouse Dock, Liverpool, on Wednesday, 5th May. As the "Eaglet" was shortly to be paid off out of the Service, all officers, R.N., R.N.R., and R.N.V.R., who had at any time been associated with her were asked to make an effort to be present.

DOMINION NAVIES.

ROYAL AUSTRALIAN NAVAL BOARD.—On 31st March the Admiralty announced that Rear-Admiral William R. Napier, C.M.G., D.S.O., had been lent to the Commonwealth Government for duty as First Naval Member of the Royal Australian Naval Board, in succession to Rear-Admiral Percival H. Hall-Thompson, C.B., C.M.G. Rear-Admiral Napier will arrive in Australia to take up his duties about July 1st.

AN AUSTRALIAN COMMODORE.—This year will mark, for the first time, the appointment of a Captain of the Royal Australian Navy to be Commodore Commanding H.M. Australian Fleet, Captain George F. Hyde, R.A.N., having been appointed to succeed Commodore T. E. Wardle, D.S.O., to date 30th April. Captain Hyde retired from the Royal Navy as a Lieutenant, and was lent for duty with the Royal Australian Navy at the time it was established in 1911, to command the Destroyer Service. He served at the Admiralty during the War, and in 1924 took command of H.M.S. "Vindictive," being the first Australian officer of post rank to command an Imperial vessel.

DOMINION CRUISERS AT AUCKLAND.—During February and March, the Australian Fleet under Commodore T. E. Wardle, D.S.O., made a cruise to New Zealand ports, visiting Dunedin, Lyttleton, Wellington and Auckland. Arriving

at the latter port on 8th March, the "Sydney," "Adelaide" and "Delhi" met there the "Dunedin," "Diomedé" and "Philomel," of the New Zealand Division. This was the first time that as many as six Dominion cruisers, three of each country, had been assembled in a New Zealand port.

NEW AUSTRALIAN CRUISERS.—The new cruisers building by Messrs. John Brown & Co., Ltd., Clydebank, for the Australian Government, have been named H.M.A.S. "Australia" and H.M.A.S. "Canberra."

VOYAGE OF H.M.A.S. "MELBOURNE."—Lent from the Royal Australian Navy in exchange for the "Delhi," the "Melbourne" arrived at Malta on 15th January. In the first week of March, at Pollensa Bay, she was transferred to the Atlantic Fleet, to accompany it home to Portsmouth on the return from the Spring cruise. The cruiser was to leave Portsmouth again on 1st May, to rejoin the Mediterranean Fleet, returning to Australia in July.

ROYAL NEW ZEALAND NAVAL BOARD.—On 10th April, the Admiralty announced that Captain George T. C. F. Swabey, D.S.O., is being lent to the Government of New Zealand for duty as First Naval Member of the Royal New Zealand Naval Board, and as Commodore, 2nd Class, in Command of the New Zealand Station, in succession to Commodore Alister F. Beal, C.M.G., to date from date of sailing. Captain Swabey is due to arrive in New Zealand to relieve Commodore Beal about 25th August.

NEW ZEALAND TRAWLER.—A trawler of the Canadian-built 125-ft. "Castle" type is being fitted out for the New Zealand Government for service in minesweeping training. The Rose Street Foundry and Engineering Co., Ltd., of Inverness, were entrusted with the work under Admiralty supervision, and the trawler will embark her crew and stores at Sheerness for the voyage to New Zealand. The vessel has been renamed the "Wakakura" (Red Canoe).

SOUTH AFRICAN TRAWLERS.—The trawlers "Immortelle" and "Sonneblom," of the South African Naval Service, embarked at Capetown in February the first local R.N.V.R. training class for twelve days' instruction. Other classes were to follow, and the vessels were to begin in March a cruise up the East African coast. Over 100 boys from the training ship "General Botha" have now gone to sea, of whom 22 are in the South African Naval Service. The Admiralty have now agreed to take boys from the vessel for Cadetships under the special entry scheme.

A ROYAL INDIAN NAVY.

At the opening of the session of the new Council of State, which took place at Delhi on 9th February last, the Viceroy announced that it was proposed to establish a Royal Indian Navy to enable India to provide her own naval defence. In the Legislative Assembly the Commander-in-Chief subsequently stated that the new Navy would be entitled to fly the White Ensign. Both announcements were greeted with marked enthusiasm.

The inauguration of the Royal Indian Navy will be entrusted to the personnel of the present Royal Indian Marine, which will be absorbed in the new Service. Commissions will be open to Indians.

The Fleet is to consist initially of four sloops, two patrol craft, four trawlers, two survey ships, and a depot ship. Headquarters will probably be Bombay.

According to a statement issued by the India Office, the functions of the Navy in peace time will be :—

- (a) The training of personnel for service in war ;
- (b) The services required by the Government of India in the Indian Ocean and Persian Gulf ;
- (c) The organization of the naval defences at ports which are under the control of the Indian Government ;
- (d) Survey work in the Indian Ocean ;
- (e) Marine transport work for the Government of India.

FOREIGN NAVIES.

CHILE.

NEW BRITISH MISSION.—In March, the members of the new British Naval Mission to Chile, whose names were given in the last number of the *JOURNAL*, arrived at Valparaiso.

DENMARK.

TRAINING CRUISES.—The "Hejmdal" and the "Gejser," training ships for midshipmen and boys respectively in the Royal Danish Navy, are announced to visit Southampton and Leith this summer. The "Hejmdal" may also visit Plymouth early in July.

FRANCE.

NEW CRUISER TRIALS.—The "Duguay-Trouin," first of the new French cruisers, began her trials in March. She is the typeship of a group of three, of 7,873 tons, armed with 6.1 inch guns, begun in 1922. Three more, of 10,000 tons, armed with 8 inch guns, were begun in 1924-25, of which the first is the "Duquesne," launched at Brest in December last. Three more vessels are projected, but not yet authorized, to be laid down between 1926 and 1929.

MINISTER ON NAVAL NEEDS.—In a statement to the Press, following a conference of Admirals on 31st January, M. Georges Leygues, Minister of Marine, expressed his wish for a Navy of which quality is the predominating factor, the aim being the best, both in men and material. He believes that the possession of a Navy distinguishes a first from a second-class Power. Adequate strength in the Mediterranean is especially essential in view of France's colonial empire in North Africa. She cannot afford to remain only a Continental Power, but must be an oceanic one too. M. Leygues added that France was most peaceful, and had no interests other than to safeguard her rights and fulfil her international obligations.

PLEA FOR MORE SUBMARINES.—In an interview with *L'Avenir*, on 5th February, M. de Kerguezec, Chairman of the Senate Naval Committee, deplores the fact that the French Navy is not in a position at present to defend communication between France and Northern Africa in case of war with a naval Power. He is most anxious for an increase in the number of submarines, which he considers could adequately fulfil the role which the French Navy would be called upon to play in time of war ; and puts the number of submarines which France ought to possess

at 150. Other French political leaders have appealed recently for better naval defence.

GERMANY.

NEW NAVY ESTIMATES.—The German Navy Estimates for 1926 provide for a total outlay of 203,000,000 marks (£10,165,000), an increase of £2,410,000 over those of the previous year. The personnel provided for is 8,515 with the Fleet, and 4,646 in shore establishments, the combined total being 1,839 short of the maximum of 15,000 allowed by the peace treaty. A large increase for new ships and their armaments is to be incurred. Following the cruiser "Emden," the completion of which was recorded in the last JOURNAL, a second vessel, "B," has been laid down at Wilhelmshaven, and two more, "C" and "D," are projected in the 1926 Estimates, but not yet authorized. Six destroyers, "W.102-107," are building at Wilhelmshaven, and six more are in the Estimates, but not yet authorized, to be laid down in 1926. They are of 773 tons, 34 knots' speed, and carry four 4.1-inch guns and four torpedo tubes. A torpedo boat also figures in the new Estimates. Submarines, of course, are forbidden by treaty. It is proposed to begin the replacement of the battleships on the list, all of which are over twenty years of age from date of laying down, but under the peace treaty, the vessels to follow them must not be of more than 10,000 tons.

GREECE.

NEW SUBMARINES.—A contract was signed on 16th February, by the Greek Minister of Marine and the representative of a French shipyard for the building of a further submarine similar to three recently ordered. Greece is expected to acquire six submarines in all within two years, and six more naval officers will proceed to France for training in under-water craft.

DESTROYER TENDERS.—In March, it was announced that tenders would be called for by the Ministry of Marine for the construction of two or four destroyers. The length of credit to be given by the builders was to be a factor in the award of the contract.

ITALY.

NAVY POLICY.—Popular interest in the Navy has been maintained throughout 1925, as in previous years since the present Government came into power.

Recent official pronouncements seem to indicate that responsible naval opinion in Italy is now practically unanimous in the policy recommended for replacing gradually, if not increasing numerically, the various units and maintaining the strength of the fleet. In preference to the construction of large and correspondingly expensive vessels, efforts will in future be directed towards the construction of numerous fast, small craft such as destroyers and C.M.B.s, and, of course, submarines.

At the moment Italy has two 10,000 ton cruisers being built—the "Trento" and "Trieste"—but there is no sign of any more being laid down, although a proposal was originally put forward to lay down two in the financial year 1924-1925, in addition to the two above mentioned, and one which it is proposed to lay down in 1927-1928. Although large sums have been set aside for the project, authorized in 1924, of creating a naval base at Cagliari, intended to replace Maddalena eventually, it is not certain that expenditure on the full scale allowed has yet been

incurred, and the same probably applies to the work at Trapani in Sicily, and San Antioco Bay in south-west Sardinia.

ADMINISTRATION.—Several administrative changes of a far-reaching character have been made during the past year.

Following the establishment in 1923, of a "Supreme Commission of Defence," a separate Ministry of Air was created in 1925, and a Field-Marshal as "Supreme Chief of the General Staff for the forces of Italy" was nominated shortly afterwards. This appointment carries with it, limited directive control over the Navy and Air Force, as well as over the Army, and the change, whilst receiving a considerable measure of support from the Army, was strenuously resisted by the Navy. Similarly, the creation of a separate Air Ministry was not at all to the liking of the naval service.

The intention of creating a single Ministry of Defence, which was expected, and which might well have been foreshadowed by these changes, is now reported to have been indefinitely postponed. At the same time, it cannot be said to have been altogether abandoned, and may be revived at a later period.

The most recent administrative change was the introduction in October of a unified Military Intelligence Service, with the object of co-ordinating the work of the intelligence branches of the three services.

In the beginning of October it was announced that a Fleet Air Arm would be formed at an early date, and it is intended that all pilots of this new branch should be naval officers. Some fifty volunteers were accordingly invited, but it seems doubtful if the response has been as eager as was anticipated. The functions of the Fleet Air Arm will presumably be similar to those of the equivalent force in the British Navy. An economy was effected in October by doing away with the naval command at Venice, and the whole Adriatic will henceforth be merged under a single officer at Taranto, with the title of "Commander-in-Chief, Ionian and Adriatic Command."

NAVAL ESTIMATES.—The estimates for 1925-1926 amount to 980,000,000 lire (£8,250,000 approximately), which is an increase of 55,000,000 lire (£500,000 approximately) over those of the previous financial year.

Comparing these estimates with those of the financial year 1924-1925, a steady increase under all the main heads of "ordinary expenditure" is observable, but it must be borne in mind that the lira has, during 1925, depreciated by some twenty per cent., representing an approximate decrease in its purchasing power throughout the country of at least fifteen per cent.

Small supplementary estimates were introduced, but, owing to decreases having been made under certain heads of the original estimates, the total increase over the original estimates was only 15,000,000 lire (£125,000 approximately).

JAPAN.

DAMAGE TO "NACHI."—The "Nachi," the most advanced of the four 10,000 ton cruisers now building at Kure dockyard, has been severely damaged by the collapse of two cranes which fell on her from a height of 120 feet, doing extensive damage and bending her keel. It is believed that she will have to be reconstructed.

VISIT TO AUSTRALIA.—Much enthusiasm was shown on the occasions of the visits of the Japanese cruiser "Iwate" to all the principal Australian ports. At Adelaide, in January, after speeches by the Lord Mayor and the State Premier,

Captain Yedahara said that although the Anglo-Japanese Alliance had expired, there was no reason why the cordial relations between the two countries should not continue. Australia's kindly attitude towards Japan, he added, would have a powerful effect on the world's peace.

PORTUGAL.

BRITISH WARSHIPS' VISIT TO LISBON.—After a visit to Lisbon in January of the British Second Cruiser Squadron under Rear-Admiral W. A. H. Kelly, consisting of the "Curacoa," "Caledon," "Comus" and "Cleopatra," the Portuguese Minister of Marine embarked in the first-named for a cruise to Gibraltar, and the Portuguese vessels "Vouga" and "Tamega" accompanied the squadron to sea. A British destroyer conveyed the Minister back to Lisbon. Probably arising out of this invitation of courtesy, it was reported in March that England had offered Portugal the sale of four war vessels. The Admiralty, in denying this, pointed out that any such transactions would be contrary to the Washington Treaty.

SPAIN.

NEW PROGRAMME.—In March last the Government authorized a new programme providing for the construction in Spanish dockyards of one light cruiser and three flotilla leaders. The cruiser, to be built at Ferrol, will be of the "Principe Alfonso" type, of 7,850 tons, 33 knots' speed, engines of 80,000 horse-power, and an armament of eight 6-inch and four 4-inch anti-aircraft guns. The flotilla leaders will be built at Cartagena, of the "Churraca" type, of 1,650 tons, with 38 knots' speed.

SWEDEN.

DEATH OF NAVAL ATTACHÉ.—His many friends in this country will lament the death of Commander Adolf de Bahr, Naval Attaché to the Swedish Legation and A.D.C. to the Crown Prince, who died in London early in April last.

UNITED STATES.

JOINT EXERCISES.—Joint exercises with the Army to elucidate problems connected with the attack and defence of the Panama Canal were held in February. During the concentration there were about 2,200 commissioned officers, 478 warrant officers, and 35,000 men, including 2,400 chief petty officers, with the Fleet. This number, added to the naval personnel attached to the Canal Zone activities, and to the Special Service Squadron, brought the total naval personnel in and about Panama to around 39,000.

CONSTRUCTION PROGRESS.—The percentage of completion of United States warships under construction on 1st February, 1926, was as follows:—Fleet Submarine "V.3," under construction at Portsmouth Navy Yard, 94.6. She is due to be launched 1st June next. The Fleet Submarine "V.4," under construction at the same yard, and which is due to be launched 1st April, 1927, was 27.9 towards completion. The airplane-carrier "Saratoga," under construction by the New York Shipbuilding Corporation was 77.7 towards completion. She is due to be

launched 1st December, 1926, and her sister-ship, the "Lexington," being constructed by the Bethlehem Shipbuilding Corporation (Fore River) was 74.5 towards completion, and she is due to be launched 1st April, 1927.

NEW CRUISERS.—The names of "Pensacola" and "Salt Lake City" have been allotted to the two cruisers to be laid down before 30th June, 1926. Six other cruisers are authorized, of which three have been appropriated for by both the House of Representatives and the Senate, and the other three, it is possible, will be laid down before the end of the United States financial year. This will bring the total of American cruisers built since the War to eighteen.

SUBMARINE TESTS.—The first of the American "fleet submarines," "V.1," satisfactorily completed a deep sea submergence test on 5th March. Originally commissioned in October, 1924, in advance of her final completion, to undergo tests of the Diesel propelling machinery, of a more powerful type than any previously built in the United States, the "V.1" finally left the Portsmouth Navy Yard on 13th February, 1926, for intensive training in the Block Island area preparatory to the submergence test. The "V" class are nearly twice as large as any previous American submarines.

ARMY NOTES

EXTRACTS FROM THE MEMORANDUM OF THE SECRETARY OF STATE FOR WAR RELATING TO THE ARMY ESTIMATES FOR 1926.

The net total of the Army Estimates for 1926 is £42,500,000, or £2,000,000 less than those of the current year. The steady fall in the provision for the Army will be clear from the following figures :—

Year.	Effective charges.	Non-effective charges.	Terminal charges.	Total.
	£	£	£	£
1922 ..	46,631,050	8,668,950	7,000,000	62,300,000
1923 ..	40,848,650	7,563,350	3,588,000	52,000,000
1924 ..	36,051,500	7,873,500	1,075,000	45,000,000
1925 ..	36,248,300	7,866,100	385,600	44,500,000
1926 ..	34,462,500	7,923,000	114,500	42,500,000

ESTABLISHMENT, STRENGTH AND DISTRIBUTION OF THE REGULAR ARMY.—The total of Vote A for 1926 is 159,400, as compared with 160,600 for 1925, a reduction of 1,200, but the figures include 3,600 Indian troops employed by the Air Ministry in Iraq, as against 4,000 for 1925, for which the War Office has no responsibility of any kind, but which for constitutional reasons are borne on the Army Vote for numbers. The reduction of 800 in the War Office sphere results from the abolition of the Corps of Military Accountants, a re-arrangement of duties and redistribution of personnel in the Royal Army Ordnance Corps which results in substantial economies, and the revision of Army Establishments generally.

One infantry battalion and one medium battery, Royal Artillery, have been transferred home from the British Army of the Rhine, which has moved from Cologne to Wiesbaden.

MANŒUVRES.—The first Army Manœuvres on a large scale in this or any other European country since the War took place last September in the neighbourhood of Salisbury. There were some 41,000 troops engaged.

The manœuvres afforded opportunities for practice in the handling of larger formations, for the testing of communication services, for experiments with new equipment and mechanized units, and for practical co-operation with the Royal Air Force. Valuable lessons were learnt, and the exercise proved the standard of our small army to be a very high one.

In spite of the most adverse climatic conditions, the discipline of the troops, both in billets and on the march, was worthy of the highest praise.

RECRUITING.—The beginning of the financial year will find the strength of the British Army, inclusive of the British troops in India, practically up to establishment, but the unusual number of men leaving the Colours during the year will require recruiting to be maintained to the fullest possible extent. In order to mitigate the effect of the abnormal outflow from the Army during the coming year and to render it more regular in future years, 3,000 men were invited in 1925

to transfer prematurely to the Army Reserve, and the response to this invitation has been satisfactory. Recourse to this measure will not be necessary next year. Recruiting during the past year has, on the whole, been satisfactory, although the reduction in pay which came into operation last October, is probably responsible for a falling off since that date, but it is anticipated that the numbers for the whole year will be only slightly short of the total required.

The total numbers enlisted are not a true indication of the popularity of the Army as a profession, since these represent only 36 per cent. of the numbers offering themselves for enlistment. The high standards of character, education and physique required account largely for the large proportion of rejections. The greatly improved conditions and prospects of Army life, mentioned in my memorandum last year, have attracted increased numbers of the best type of recruit; in London, for instance, 40 per cent. of the recruits enlisted were in employment. The regulation under which recruits are enabled to make allotments of pay to their parents and other dependants through the regimental paymaster has proved very popular, and in many districts as many as 70 per cent. of the recruits presenting themselves have taken advantage of it.

The scheme for training boys as tradesmen, introduced in 1923, is still producing good results. The number of boys at the Beachley Training School has now reached 865, and the full establishment of 990 will be reached in May next. Applications exceed the vacancies offered, but the number of successful candidates in the competitive examinations has latterly fallen slightly short of requirements. The results of the scheme will become apparent next autumn when the first batch of boys will have completed their training at the school and will be posted to their corps in the Regular Army. From then onwards an even flow of about 300 boys annually will be absorbed into the Army as tradesmen from this source, and should enable the War Office to make good the deficiencies caused by the lack of recruits possessed of the requisite trade qualifications.

ARMY AND SUPPLEMENTARY RESERVES.—The total strength of the Army Reserve on 1st April, 1926, will approximate to 96,000, an increase of some 5,000 during the year. During the coming year a large number of reservists is due to leave on the expiration of their engagements, with the result that on 1st April, 1927, the total strength will probably have fallen to about 89,000. For the same reason a further slight fall will occur in 1927, but from 1928 onwards the strength of the Reserve should grow rapidly. For reasons of economy it is not proposed to supplement the Army Reserve during the ensuing year by any direct enlistments into Section D. As indicated last year, Section A of the Army Reserve has been re-opened. Of the 3,000 authorized, 2,000 infantry have already enrolled, and recruiting for other arms is in progress.

Recruiting for the Supplementary Reserve, which was opened in 1924, has been fairly satisfactory except in the case of officers, of whom only 15 per cent. have been obtained as against 55 per cent. in the case of men. Misapprehensions as to the liabilities attaching to service in this Reserve operated detrimentally in the initial stages, and a wider and more technical knowledge is expected than is generally possessed by men in the corresponding trade in civil life.

TERRITORIAL ARMY.—The strength of the Territorial Army on 1st February, 1926, was 6,313 officers and 138,332 other ranks, an increase of 192 officers and 4,851 other ranks, as compared with 1st February, 1925. The present strength represents 81 per cent. of the authorized peace establishment in the case of officers

and 79 per cent. in the case of other ranks. In spite of the high standards now exacted, 4,335 more recruits were enlisted during the last recruiting year than during the preceding twelve months. The Territorial Army is still, however, some 39,000 all ranks below its peace establishment, and recruiting for the new air defence units authorized since 1924, the importance of whose defensive role to the nation is deserving of greater recognition, has been particularly disappointing, as these units are still over 70 per cent. below their establishment.

HEALTH OF THE ARMY.—The health of the Army throughout the year remained very satisfactory. There was no epidemic or undue sickness among the troops, and in spite of the increasing incidence of smallpox among the civil population in certain areas of the United Kingdom, no cases have occurred in the Regular Army or at the annual training camps of the Territorial Army.

The number of equipped hospital beds has remained approximately the same as in the previous year, but reductions, both at home and abroad, may be practicable during the forthcoming year.

WORKS SERVICES.—The expenditure under this Vote covers new barracks, improvements to old barracks required in the interests of health and moral, further provision of houses for married personnel, and modernization of power installations with a view to economies in operation. Until the accommodation given up in the Irish Free State has been replaced, annual expenditure on the first of these services is necessarily heavy, but progress on the new camp at Catterick has been accelerated, and this will help to reduce the commitments for future years. On the other hand, urgent services, both of construction and maintenance, have had to be postponed in order to reduce the total of estimates as required by the general financial situation, and the resulting arrears will necessarily have to be overtaken in future years.

The reconstruction of out-of-date barracks for the Guards in London is approaching completion. In Egypt, the proposals for improved housing will be advanced.

ARMAMENTS AND RESEARCH.—Attention continues to be paid to the problem of new designs of guns and ammunition both for the field army and for coast defence, and a further advance has been made in the matter of anti-gas defence, while new instruments for directing fire against aircraft have undergone successful trials. The repair of war-stocks of guns, carriages, etc., continues as far as funds admit.

The equipment of the Royal Tank Corps with the new pattern light tank is proceeding; four batteries of medium artillery have now been equipped with dragons and provision is being made to equip another four batteries; new types of tracked and semi-tracked machines for field artillery will be tried during the ensuing training season; and experimental cross-country machines such as smaller types of tanks, machine gun carriers and reconnaissance machines are under construction.

The Royal Engineer Board continues its researches into the adaptation to military uses of modern inventions in connection with engineer plant, bridges and wireless methods of signal communication.

MEDALS AND BATTLE HONOURS.—The issue of medals for the Great War to some six million persons scattered throughout the world has been brought nearer completion, but there are still some 200,000 whose addresses, in spite of the ready

assistance of the various agencies of publicity, cannot be traced. A proposal to issue battle clasps to these medals has been fully considered, but has had to be abandoned on financial grounds.

The allocation of battle honours to regiments of the British Army and the Indian Army has been concluded.

HOME.

REGULAR FORCES.

APPOINTMENTS AND PROMOTIONS.—The principal changes that have occurred during the past quarter are the following :—

General Sir George F. Milne, G.C.M.G., K.C.B., D.S.O., A.D.C., has succeeded General the Earl of Cavan, K.P., G.C.M.G., G.C.V.O., K.C.B., as Chief of the Imperial General Staff. Lord Cavan on relinquishing that office retired on retired pay.

General Sir Francis J. Davies, Lieut.-General Sir Travers E. Clarke and Lieut.-General Sir Sydney Lawford have also retired.

Lieut.-General Sir A. de Beauvoir De Lisle, K.C.B., K.C.M.G., D.S.O., and Lieut.-General Sir John P. Du Cane, K.C.B., Lieut.-General Sir Walter P. Braithwaite, K.C.B., have been promoted Generals.

Finally, Major-Generals Sir John S. Fowler, K.C.M.G., C.B., D.S.O., Sir Archibald A. Montgomery, K.C.B., K.C.M.G., Sir William C. G. Heneker, K.C.B., K.C.M.G., D.S.O., Sir Cameron Shute, K.C.B., K.C.M.G., are promoted Lieut.-Generals.

These various promotions have occasioned fresh appointments to Divisional Commands. The four Regular Divisions will thus be commanded this summer as follows :—

- 1st Division. .. Major-General Sir Cecil F. Romer, K.B.E., C.B., C.M.G.
- 2nd Division .. Major-General Sir Peter E. Strickland, K.C.B., K.B.E., C.M.G., D.S.O.
- 3rd Division .. Major-General Sir John T. Burnett-Stuart, K.B.E., C.B., C.M.G., D.S.O.
- 4th Division .. Major-General Sir P. P. de B. Radcliffe, K.C.M.G., C.B., D.S.O.

NEW CADRES OF FIELD PARK COMPANIES: ROYAL ENGINEERS.—The King has approved of the formation of cadres of three Field Park Companies of the Corps of Royal Engineers to be designated respectively the 6th, 15th and 18th Field Park Companies, Royal Engineers.

OBLIGATIONS OF ARMY OFFICERS ATTENDING COURSES OF INSTRUCTION.—Officers taking the course for Royal Engineers at Cambridge University, the Staff College course, and the course for Royal Army Ordnance Corps officers, will be required to sign an honourable undertaking to continue to serve in the Army, after completion of the course, for a minimum period of five years. In the case of officers taking the course at the London School of Economics, the period is three years.

The fact that an officer has signed such an undertaking will not preclude the Army Council from releasing him from his obligation should the circumstances justify his release; but an officer who receives permission to resign his commission before the expiration of the period for which he undertakes to continue to serve.

after completion of a course will be required to join the Regular Army Reserve of Officers.

Officers who take the electrical and mechanical course for Royal Engineer officers, the course on civil railways for Royal Engineer officers, the course for Royal Corps of Signals officers at Cambridge University, the course for Royal Army Service Corps (Mechanical Transport) officers at civilian works, and the language course for officers in China and Japan, will not be required to sign an undertaking to continue to serve, after completion of a course. The sanction of the Army Council will not be given, however, to their retiring with less than fifteen years' service.

The provisions of this Army Order will not apply to officers who have already undergone any of the above courses or who have already begun one of these courses at the date of this Army Order. Such officers will continue to be bound by the conditions existing at the date on which they began the course.

PHYSICAL EFFICIENCY OF ARMY RECRUITS: RUNNING AND JUMPING TESTS.—

A series of tests has been evolved with a view to indicating the physical efficiency of the recruit. In addition to ordinary physical training by exercises and gymnastics there will be "field tests" in which marks will be assigned according to the soldier's times and distances in running, jumping, striding and heaving a 16-lb. shot. A fixed number of marks must be gained by the soldier to reach the various grades of fitness in each of these field tests; e.g., to attain "standard" a recruit must either obtain 40 in each test or, should he fail in any test, an average of 50 and similarly in the other grades laid down, except that to reach "1st class" or "Special," he is not required or expected to reach this grade in every test.

The "physical efficiency" classification of the individual will be found by taking the average of the points or marks gained in each test. In the case of a recruit, the test will ordinarily be 1 mile at the end of the first month's training, 2 miles at the end of the second month, and 3 miles on completion of his first three months' training. All the tests, whether field tests or tests as to weight and physical development, are so designed that the results can be shown on a simple chart; and it is believed that such a chart will tend to create interest and incentive to improvement in the recruit himself. The tests and charts will be taken into general use at all depots which have an instructor of the Army Physical Training Staff.

ARMY EDUCATIONAL TRAINING: 1,381 FIRST CLASS CERTIFICATES.—The report on the last Examination of soldiers for the Army First Class Certificate of Education and the Army Special Certificate shows that 2,319 candidates sat for the tests. Of this number 2,110 entered for the First Class Certificate and 1,365 were successful. This result shows 65 per cent. of successes, as against 41 per cent. in the previous April Examination. For the Special Certificate, which is equivalent to University matriculation, there were 204 candidates, of whom eight took the whole examination and obtained the certificate, while 31 who took only such subjects as were required to complete their qualification, were successful. Sixteen others who failed to qualify for the Special were awarded the First Class Certificate.

Five candidates who had already matriculated at a University (or passed an equivalent examination) presented themselves only in map reading to complete their qualification, and were successful in so doing.

THE ARMY AND THE EMPIRE.—The syllabus for "English" for the Army Second Class Certificate has been amended so as to provide for a short course

on "The Army and the Empire," based on regimental history and showing the connection between the geography and history of the Empire and the history of the regiment or corps. The object of this course is to build upon the regimental history and tradition dealt with in the Third Class Certificate, and to stimulate the soldier's interest in the past records of his regiment or corps and in the history of the Empire, with which its geography must necessarily be associated.

WORK FOR EX-SOLDIERS.—In January, 116 students completed their training at the Army Vocational Training Centres, Hounslow and Catterick, and were formally discharged from the Army on the termination of their Colour service. Of this number, 95 obtained employment in civil life on the completion of their training, some going to carpentry, bricklaying, painting and decorating, and upholstery, and others to fitting and turning, motor and electrical work, market gardening, general farming, and half a dozen other forms of employment.

In February, 117 men completed their training at these centres, of whom 102 have succeeded in obtaining immediate employment in civil life.

MILITARY HOSPITALS RESERVE.—The reorganization of the "Home Hospitals Reserve" under the designation of "The Military Hospitals Reserve" has been approved and the qualifications for enrolment have been published.

This reserve will consist of warrant and non-commissioned officers and privates only, with an authorized establishment of 2,000.

The functions of the Reserve will be (a) to staff the military hospitals and other establishments maintained by the regular medical services, upon the mobilization and withdrawal of the regular R.A.M.C. for duty in the field; and (b) to provide reinforcements for the medical units of the expeditionary force overseas after mobilization.

Membership will be entirely voluntary and the personnel will be provided by the St. John Ambulance Brigade for England and Wales and Northern Ireland, and the St. Andrew's Ambulance Corps for Scotland.

The age limits for enrolment will be from 19 to 40 years of age, and no member will be permitted to remain in the Reserve after he has reached the age of 45 years.

Every applicant must be in possession of the first-aid certificate recognised or granted by the St. John Ambulance Association or St. Andrew's Ambulance Association, and, in addition, obtain a nursing certificate recognised by those bodies within a period of 12 months after enrolment.

A proportion of the total establishment of each rank in the Reserve will, in annual rotation, receive training for eight days under military arrangements. The requisite training will be undergone in a military hospital or other military medical establishment, and as far as possible a member will be detailed for this purpose to the hospital to which he would be posted on mobilization.

A member of the Reserve will receive, both during training and on coming up for duty in replacement of a member of the R.A.M.C., pay and allowances at the rates laid down for a man of the corresponding army rank and trade group (if qualified) whom he has been detailed to replace on mobilization; and promotion to fill the authorized establishment of ranks during service in the Reserve will be given according to service, merit and qualifications.

SUPPLEMENTARY RESERVE OF OFFICERS: RANK AND PRECEDENCE.—A Royal Warrant provides that officers of the Supplementary Reserve of Officers shall take rank and precedence on equal terms with officers of the Territorial

Army. Officers who belonged to the Royal Monmouthshire Royal Engineers on 8th August, 1924, will, however, retain their militia status and take precedence of and command over officers of the Territorial Army of the same rank.

TERRITORIAL ARMY.

CLOTHING GRANT REDUCED.—It is officially stated that it being no longer necessary to maintain the clothing grant for the Territorial Army on its present basis of assessment, the grant will henceforward be reduced from £1 12s. 6d. to £1 7s. 6d. for each warrant officer, non-commissioned officer and man.

DOMINION FORCES.

THE KING'S MEDAL.—The King has been pleased to approve of the grant of "The King's Medal," to the Champion Shot of the Military Forces of Southern Rhodesia. There will now be seven such medals to be awarded annually, namely, to the Champion Shots of the Military Forces at Home, and of the Military Forces of India, Canada, Australia, New Zealand, the Union of South Africa, and Southern Rhodesia.

SOUTH AFRICAN CANDIDATES FOR ENTRY BY NOMINATION INTO THE ROYAL NAVY, THE BRITISH ARMY AND THE ROYAL AIR FORCE.—Parents or guardians who are desirous of entering their sons or wards into the Royal Navy, British Army, or Royal Air Force, are notified that the Imperial Government has granted the Government of the Union of South Africa the privilege of nominating candidates. Full particulars are published in the *Union Gazette*, of 31st December, 1925.

REGIMENTAL ALLIANCES.—The King has approved of the following regimental alliances:—

Non-Permanent Forces of Canadian Militia.—The Kent Regiment to The Queen's Own Royal West Kent Regiment; Dufferin Rifles of Canada to The King's Royal Rifle Corps.

Australian Military Forces.—2nd Light Horse Regiment to The 4th Queen's Own Hussars; 12th Light Horse Regiment to The Royal Scots Greys (2nd Dragoons); Corps of Australian Engineers to The Corps of Royal Engineers; Australian Corps of Signals to The Royal Corps of Signals; 32nd Battalion, Australian Infantry to The Leicestershire Regiment.

New Zealand Forces.—Corps of New Zealand Engineers to the Corps of Royal Engineers; Hawkes Bay Regiment to The Royal Berkshire Regiment (Princess Charlotte of Wales's).

Union of South Africa Defence Forces.—South African Engineer Corps to the Corps of Royal Engineers; 7th Infantry (Kimberley Regiment) to The Loyal Regiment (North Lancashire).

FOREIGN.

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CZECHOSLOVAKIA.

GENERAL.—During the year 1925 the Czechoslovak Army has continued to improve in training and equipment, and from the purely technical point of view

may be said to have reached a high standard of efficiency. On the other hand, the long-promised amelioration in the pay and conditions of service of the regular officers and warrant officers is still delayed, and the resultant dissatisfaction in the permanent staff of the army has done little to heal the breach between the Legionaries and the ex-Austrians.

STRENGTH OF THE ARMY AND THE BUDGET.—The law ordaining a period of eighteen months of compulsory military service remained in force throughout the year. Under this, the active army had a strength of about 150,000 all ranks from 1st January to 31st March, 90,000 from 1st April to 30th September, and again 150,000 from 1st October to 31st December. The depleted effectives during the summer months were brought up to a higher establishment by the calling up of some 250,000 reservists for periods of fourteen days or one month. The same law will remain in force for 1926, although the new government has promised to reduce the term of colour service after the introduction of a scheme for the compulsory military training of young men between the ages of 18 and 20 years before their conscription.

The budget for 1926, which was produced by the late government before the election, provided for practically the same number of permanent staff as in 1925 :—

Officers	..	..	..	..	..	10,011
Warrant officers	..	..	..	..	..	11,207

and the same effective strength of conscripts as shown above. The number of reservists, however, to be called up for periods of training in the summer is only to be 150,000. The total military budget for the year 1926 amounts to Kc. 1,935,402,500 (about £12,500,000 sterling). This figure represents 19.22 per cent. of the total budget for the whole Republic, and is an increase of Kc. 119,966,790 (about £750,000 sterling) on the previous year's army votes. This increase is chiefly accounted for by the re-equipment with small arms, the expansion of the air arm, and the provision of new ordnance and armoured cars.

STANDARDIZATION OF SMALL ARMS.—The policy of simplification of the types of small arms in use in the army was initiated as long ago as 1921, and during the last year has approached realization.

In the spring of 1925, the Government Rifle Factory at Brno began the mass production of the "Short Mauser" rifle, Type 79/24. By December, seventy-five per cent. of the infantry had been equipped with this weapon, and by the middle of 1926 it will have replaced the "Long Mauser," the Mannlicher M/98 and the Mannlicher carbine, in all arms and services.

During the autumn of 1925 the bulk manufacture of the Praga light machine gun was begun, and it is intended that this shall replace the many types of light automatic weapon now existing in the army. The change, however, will hardly be completed by the end of 1926.

The Schwarzlose heavy machine gun—Type M/7/12—has been universal in the Czechoslovak Army since 1920, and there is, as yet, no word of its being replaced.

It may therefore be said, that at no distant date, all small arms in the army will take 7.9 mm. ammunition.

MECHANICALIZATION OF THE FIELD ARTILLERY.—Interesting experiments have taken place during 1925 in this direction. Two types of caterpillar tractors were tried, for the draught of the 8 cm. field gun and the 10 cm. field howitzer :—

- (a) The "W.D." tractor of German manufacture, 25 h.p.
- (b) The "Praga" tractor of Czechoslovak manufacture, 35 h.p.

Both tractors gave good results ; but the tactical interest of the experiments lies rather in the organization of the mechanized batteries. The tractors, complete with guns and limbers, were loaded on six-wheel Laurien-Clement 60-h.p. lorries. Up to the moment of deployment the equipment moved thus loaded. When action was ordered, the guns and tractors were off-loaded, under their own power, and proceeded into action ; the six-wheel carriers being withdrawn into park at some distance from the gun line. Minor tactical movements were carried out under caterpillar draught, as were also the ammunition replenishments during action. Long marches were effected after re-loading on the six-wheel carriers.

TRAINING.—During 1925 there were no manœuvres for formations larger than a division ; but regimental and brigade training was thorough and extensive. As a result, the leading of lower units and formations has shown a remarkable improvement. The air force co-operated in a large number of exercises with other arms. Although the higher command often left much to be desired, the French Military Mission are to be congratulated on the results of their labours in the direction of tactical education.

HOLLAND.

ARMY ESTIMATES.—The Army Estimates for 1926 were issued in the autumn and amounted to 58,606,977 florins, or approximately 200,000 florins more than was voted for 1925.

An analysis of the proposed expenditure shows how difficult it will be for the government to comply with the demands of the Socialists and other parties for reduction on defence, unless the army itself is again to be reduced. The greater part of the money is required for pay, but twenty per cent. of the total is earmarked for non-effective pay and pensions, which would necessarily be increased through relegating a larger number of the existing personnel to the retired or unemployed list.

About 6,000,000 florins have been voted for the renewal and replacement of artillery and equipment. Although for a small country like Holland, this is a considerable amount, yet in view of the high prices of modern war material, unless greatly increased expenditure is incurred, many years must elapse before the Dutch Army is efficiently equipped according to modern standards.

An amount of 2,745,000 florins, which is practically the same as has been voted in previous years, is just sufficient to maintain the Air Force at its present strength. The Dutch Air Force, small as it is, is efficient and is one of the redeeming factors in the Army.

MINISTRY OF NATIONAL DEFENCE.—As far back as 1920 a Royal Decree was published constituting a single Department of Defence ; the date upon which it was to come into operation was to be fixed at a later date, and General Pop was provisionally appointed Minister of War and Minister of Marine. However, the proposals did not materialize, and separate ministers were subsequently appointed for the two departments.

The government which came into power after the general elections in 1925, decided that the time was ripe for the amalgamation of the two departments into a Ministry of National Defence. No mention was made in the 1926 estimates of the pay for the latter office. A naval officer has been appointed as a temporary measure to assist and advise the Minister pending the appointment of a Director-General of the Navy.

DISARMAMENT.—Whilst the cry for the reduction of expenditure on defence is insistent, none but a certain number of extremists in the Second Chamber demand total disarmament. Without modifying the Constitution it is impossible to abolish the Army and Navy of the Netherlands. However, a number of Social Democrat members of the Second Chamber have submitted a bill which is really nothing more than a copy of the Danish Disarmament Bill, which advocates the abolition of the Army and Navy and the institution of a Watch Corps on land and a State Marine on the sea. It does not at present seem that the Disarmament Bill will be seriously considered by the Government.

CONSCIENTIOUS OBJECTORS.—There are reported to be a number of conscientious objectors who have been granted exemption from service with the army under the conditions laid down in the Act. The Government, however, seems at a loss to know what to do with them. They are liable to serve in some branch of State industry, being treated as soldiers as regards rations and pay; but the difficulty is to collect them in numbers sufficient to make it worth while employing and controlling them in suitable positions.

ITALY.

MILITARY BUDGET, 1925-26.—The Italian financial year starts on 1st July and ends on 30th June. The following table, therefore, shows a comparison between the estimates for the three fighting services for the year ending 30th June, 1925, and for the year ending 30th June, 1926:—

Army—	1924-25.		1925-26.	
	Lire		Lire	
Estimate	1,897,468,547*	..	2,127,585,447
Actual Expenditure	2,151,249,447	..	—
Navy	925,046,030	..	980,000,000
Air Force	449,000,000	..	449,000,000
Colonial Troops	251,415,510†	..	266,317,902

* As revised up to 31st October, 1924.

† As revised up to 31st December, 1924.

It will be noted that the army estimates for the current year are considerably in excess of those for last year, but slightly less than the actual expenditure for the same period. For years past the annual estimates have borne little relation to actual expenditure, having been invariably succeeded by a flood of supplementary estimates. Last year a genuine attempt was made to present original estimates more in accordance with probable realities, and the close approximation of those for this year with the expenditure for last year seems to suggest that an end has been made of the old bad system.

The following analysis of the financial proceedings of the army for the year 1924-25 affords a good example of the manner in which the original estimates have, in the past, been in the habit of growing during the year.

The army estimates for 1924-25, as revised up to 31st October, 1924, showed a total expenditure of 1,897,468,547 lire, made up of:—

	Lire.	
Ordinary Expenditure	1,795,320,600
Extraordinary Expenditure	102,147,947
Total	1,897,468,547

Of this total, however, only 1,256,199,000 lire were allotted to the "effective" army; the difference of 641,269,547 lire being absorbed by:—

	Lire.
Carabinieri	526,604,800
Pensions, ordinary	106,831,200
Military Missions, etc., abroad	3,000,000
Various Non-effective Charges, mainly resulting from the War	4,833,547
Total	641,269,547

Between 31st October, 1924, and 30th June, 1925, Supplementary Estimates caused many alterations to be made in the original figures; a few savings were effected, but these were more than counter-balanced by Supplementary Credits amounting to 253,780,900 lire.

A reduction of 560,804,141 lire on the Expenditure for 1923-24. The Estimates for 1925-26 show:—

	Lire.
(A) Ordinary Expenditure	1,813,753,900
Extraordinary Expenditure	313,831,547
Total	2,127,585,447

Supplementary Estimates for 1925-26, amounting to the following sums, have already been announced by Royal Decree:—

	Lire.
Personal Equipment	120,000,000
Rations	40,000,000
Forage	12,000,000
Remounts	1,000,000
Maintenance of Arms and Artillery Material	27,000,000
Total	200,000,000

A further "Extraordinary" Expenditure of 88,000,000 lire has also been sanctioned for munitions and explosives and for the construction of magazines. The Italian Army still has many old and defective stocks of explosives remaining over from the War; also many magazines are in an unsatisfactory state. In fact, there is little doubt that a number of more or less serious explosions that have occurred in the last few years have been due to these causes.

In conclusion, it may be said that there is nothing in the Estimates to indicate any change in Italian Military Policy. The new items of 147,300,000 lire for mobilization equipment and 52,700,000 for fortifications and military buildings at first sight look somewhat aggressive and bellicose, but these items can quite well be accounted for by necessary replacements and repairs.

The exchange value of the lire may be taken as 120 to the £.

MILITARY INTELLIGENCE.—In November, 1925, a Supreme Intelligence Department was formed at the Ministry of War and placed directly under the Chief of the General Staff of the Army for the purpose of co-ordinating the work of the Intelligence organizations already existing in the Navy, Army and Air Force. The

staff of each of the three services remains responsible for the collection of information affecting itself, but is obliged to communicate to the Supreme Intelligence Department all information likely to be of use to the other two services.

JAPAN.

THE JAPANESE ARMY IN 1925.—(a) *Strength*.—The outstanding feature of the past twelve months has been the completion of the reduction of the Army from 21 to 17 Divisions, involving the abolition of:—

- 4 Divisional Headquarters (13th, 15th, 17th, 18th).
- 8 Infantry Brigade Headquarters.
- 16 Infantry Regiments.
- 4 Cavalry Regiments.
- 4 Field Artillery Regiments.
- 4 Engineer Battalions.
- 4 Transport Battalions.

Re-adjustments, consequent on the above, include the reconstitution of 11 other Divisions and 18 Infantry Brigades, while at the same time certain independent cavalry and artillery formations were re-brigaded.

(b) *Air Force, Tanks and Anti-Aircraft*.—Amongst other changes is to be noticed the increase by 50 per cent. in the Air Force and the constitution of two tank and two anti-aircraft units. The complete task of forming these units is estimated to take three to four years; in the peace distribution table only one tank unit and one anti-aircraft unit appear as yet; even these two units may be regarded as paper units for the present.

It seems probable that Japan will shortly acquire the rights to manufacture Renault and Vickers tanks in the steel works at Muroran.

(c) *Automatic Weapons*.—The number of light machine guns in units is being increased to six guns per company; these guns are now in process of manufacture and issue. The future organization of heavy machine guns is still doubtful. A reasonable forecast indicates the abolition of the regimental machine-gun company and the formation, for both peace and war, of battalion machine-gun companies, each of four guns.

(d) *Chemical Warfare*.—The Scientific Laboratory at Tokyo is being enlarged and increasing interest is being taken in chemical warfare by the Japanese Military authorities.

(e) *Military Training in Universities and Schools*.—During 1925 the system of intensified military training in Universities and secondary schools was introduced, and despite much ill-informed criticism in the press, appears to be progressing.

OVERSEAS GARRISONS.—(a) *Formosa*.—An increase in the garrison of Formosa is under consideration, by which an aviation wing is to be stationed at the National Aerodrome at Heito. It is considered that the utilization of an existing police aerodrome by a military air unit cannot be interpreted as the establishment of "new formations," nor an "increase" in the "coast defences," and so does not infringe Article 19 of the Naval Treaty of Washington.

(b) *Saghalien*.—From North Saghalien the Japanese expeditionary force was withdrawn gradually during the first half of 1925. In South Saghalien no troops are stationed.

(c) *North China*.—A relief of the 6th (Kumamoto) by the 10th (Himoji) Division took place in Manchuria during the early part of the summer.

In December the fighting between Chang-Tso-lin and Kuo-Sung-ling threatened to spread disorder in the South Manchurian Railway zone. Normal wastage reduced the 10th Division to below half strength and necessitated the despatch of 1,000 infantry and artillery from Korea and a mixed brigade, totalling 2,500, form the 12th Division at Kurume. By the end of December the troops from Korea had returned to their stations, and the 12th Division's mixed brigade was ordered to return during January of this year.

Tientsin was reinforced by one battalion from Port Arthur. To avoid such expense in the future a proposal is under consideration to increase the existing Japanese garrison at Tientsin.

ARMY ESTIMATES.—The army estimates for 1925-26 showed a reduction on the previous year's figures of 25,000,000 yen. These figures comprise reductions of 20,000,000 yen through the abolition of four divisions and other units, while an increase of 12,000,000 yen is shown for new units.

For subsequent years the ultimate figures are considerably greater, e.g., 20,000,000 yen for air, about 3,000,000 yen each for chemical research and tanks, 2,000,000 yen for anti-aircraft defence, and over 2,500,000 yen for machine guns and improved equipment. For next year the estimates are reported to be 200,000,000 yen, with a peace strength for the army of 200,000 men.

THE MILITARY AIR SERVICE.—The air service has now been formed into a separate branch of the Japanese Army, similar to the infantry or artillery, with an enlargement and re-organization of the directorate of military aviation.

Plans have been formulated for raising two new air formations and one balloon section, involving an increase in the number of flights in existing formations from eighteen to twenty-six. The increase proposed is to be gradual, and will not be completed before 1926, at the earliest, by which time it is doubtful if the Japanese will be much nearer European standards of aviation than they are at present. For the first time "air manœuvres" were held in September and training generally was on more ambitious lines than in former years.

SWITZERLAND.

MILITARY EXPENDITURE.—The Budget of the Military Department for 1925 amounted to 84,990,653 francs, plus a supplementary credit of 1,860,740 francs due to that portion of the expenses of reorganization allotted to the year 1925. The total expenses of the military re-organization are estimated to amount to £1,250,000 in ten yearly payments.

The estimated expenditure for 1926 shows an increase on the 1925 figures of 947,557 francs.

MILITARY OPINION.—The attitude of the Swiss people and their military hierarchy, remains unchanged as regards the retention and development of the National Army. This is conclusively shown by the extreme facility with which credits are obtained for increased military expenditure, and for the introduction of modern armament and equipment.

As in 1924, the dazzling vistas of universal disarmament propounded at Geneva are regarded with mistrust. The Swiss have no intention of abandoning the defence, by arms, if necessary of their hearths and homes. Nor do they consider that the world situation is such as to encourage immediate disarmament for small nations. From a military point of view, the Swiss are now anxious to modernize their army, which for various reasons is in many ways out of date. To a great extent their present reorganization will have the desired effect, as regards organization. The Swiss, being a practical race, are bent on picking all the best bits out of the regulations of the larger nations with experience of modern war.

THE STAFF.—The reorganization of the Swiss Staff is proceeding slowly. Its existing form is on the German system, but antiquated, and it does not work out favourably in practice. The reorganization will evolve a better system.

ARMAMENT.—As regards armament, no immediate changes are likely for financial reasons, over and above the issue of the "Furrer fusil mitrailleur," issue of which begins this year (1926). There are, however, distinct indications of a fairly early rearmament with a specially designed howitzer of "Skoda" design. The present reorganization should be, and doubtless will be, completed by 1929.

MORAL OF THE ARMY.—The excellent spirit and moral of the army remain unchanged, and the idea of civic duty is highly developed. Anti-militarist pamphlets were distributed on a small scale in the 1st Army Corps area in the spring training season, 1925, but without any successful results.

The various officers', non-commissioned officers' and other military societies have taken a great spurt during 1925. These institutions play a great part, especially morally, in Swiss military life, and develop comradeship and patriotism. Finally, it may be stated that the Swiss Army is in a healthy condition, and that its personnel is as patriotic and well disciplined as ever. It is increasing in numbers up to its pre-war strength, and is being brought up to date in armament and training to such a pitch as is necessary, or as such a small country can afford.

TURKEY.

BUDGET FOR 1926-27.—The Budget Law for the financial year 1926-27 has now been presented to the Grand National Assembly at Angora, and an examination of the details is not without interest. Complete mystery, however, surrounds all Turkish Government finance. As the Budgets submitted to the Grand National Assembly are prospective only, and as no retrospective accounts of expenditure are ever submitted, finance is a mere matter of conjecture. It is important to realise, therefore, that the Budget only expresses the ostensible intentions of the Turkish Government, and an examination of its details gives no real picture of the state of the National finances.

The two arresting features of this draft Budget are :—

- (a) The proposed creation of new taxes to effect a large increase of revenue ;
- (b) The great increase in the credits allotted to the Ministry of National Defence for the year in question.

Turning first to revenue, this preliminary Budget estimates for £T.218,300,000 as compared to £T.153,000,000 in 1925-26, an increase of some sixty-five millions of pounds (Turkish). This increase is to be obtained from new taxes, of which the most important will be a direct tax on all persons resident in Turkey, probably a form of income tax.

As to expenditure, the total credits allotted to the various Ministries for expenditure in 1926-27 amount to £T.233,000,000 compared to £T.170,000,000 for the year 1925-26, an increase of £T.63,000,000. No less than 70 per cent. of this increase is divided between the Ministries of National Defence and of Public Works. The former is the most favoured Department and its expenditure is budgeted at £T.80,000,000, an increase of £T.36,500,000 over the figures for the previous year. This increase must be reduced by £T.4,000,000 which represents the vote for military factories which was assigned in the Budget of the current year. The fact that the expenditure on national defence is more than 33 per cent. of the total expenditure budgeted, constitutes a somewhat sinister phenomenon, but two observations may be offered on it, the first that there is no certainty that the expenditure proposed will take place and the second that even if it does it can only be incurred after some months in the future so that it does not constitute an immediate menace.

The expenditure allotted to the Ministry of Public Works shows a total of £T.25,000,000, an increase of £T.9,000,000. Port and railway construction are the chief reasons for this increase.

It will be seen that no attempt has been made to balance the Budget submitted, but as no State accounts have ever been published showing the country's true revenue and expenditure during the previous year, this would hardly appear to be imperative. Some indication of the true state of Turkey's national finances can no doubt be obtained from a study of the exchange. The latter has been gradually falling for some years and the pound sterling is now worth about nine Turkish pounds. The fall in the exchange has not been due to inflation as the Treasury has been printing but little new money; the exchange, however, remains very susceptible and a report in July that the Government had decided to increase the note circulation by £T.100,000,000 caused an immediate and catastrophic break in the exchange which did not recover until the Government had officially denied the report.

AIR NOTES

ROYAL AIR FORCE

THE AIR ESTIMATES, 1926-7.

The net Air Estimates for the current year amount to £16,000,000, an increase of £487,000. There is, however, a decrease of the gross estimates, owing to a reduction of that part of air expenditure which falls finally on the Middle East Vote in respect of Iraq, Palestine and Transjordan, and on Navy Votes in respect of the Fleet Air Arm.

The decrease in the provision for the Middle East represents another stage in the progressive diminution of the British forces in Iraq and Palestine. The decrease on the Fleet Air Arm is mainly due to the non-recurrence of capital expenditure on new equipment; there is to be no diminution of the strength of the arm in the coming year.

The increase on the net estimates reflects the higher level of strength of the Home Defence Force; expansion has been proceeding during the current year. While, however, the gradual growth of the Air Force for Home Defence continues, the actual rate of expansion is decreased. When, in 1923, the then Government decided to increase the strength of the Home Defence Force to fifty-two squadrons (thirty-nine regular) it was contemplated that this could be achieved by the year 1928. It had already become apparent, however, that the very complicated programme could hardly be completed before the year 1930.

The recent decision is that in existing circumstances even this date need not be aimed at for completion of the programme, and is open to review in accordance with the international situation, and particularly with the results of international discussions on disarmament.

STRENGTH, DISTRIBUTION AND EMPLOYMENT.—During the past year the strength of the Air Force has been increased by two regular squadrons, one special reserve squadron and four auxiliary air force squadrons, and, apart from training units and establishments, it now stands at approximately the equivalent to sixty-one squadrons, fifty-six of which are maintained on a regular basis.

Of the regular units forty-five are organized on a squadron basis (in addition to two detached flights), the remainder being composed of eighteen flights (numerically equivalent to about nine squadrons), provided for service in the Fleet Air Arm, and two flights controlled by the Air Ministry for operation from coastal bases.

The distribution on a squadron basis is as follows:—

	Regular.		A.A.F. & S.R.
	Squadrons	Flights	Squadrons
Home	27	1	5
Iraq	8	—	—
India	6	—	—
Egypt, Palestine and Trans-			
jordan	4	—	—
Aden and Somaliland ..	—	1	—

The Home Defence Force consists of twenty-five squadrons, including one special reserve and four Auxiliary Air Force.

The strength of the Fleet Air Arm remains at eighteen flights, the increase of four flights which it was proposed to effect in 1925 having been postponed, in conformity with a deferment of the completion of the aircraft-carrier for which they will be required.

The provision of squadrons for co-operation with the Army remains unchanged.

R.A.F. IN IRAQ.—It is proposed to proceed with the scheme for the progressive reduction of the Imperial garrison in Iraq, provided that there are no untoward political developments.

Three squadrons continue to be maintained in Egypt, and a detached flight of three aircraft at Aden with one machine in reserve in Somaliland. One squadron is provided for Palestine and Transjordan, one flight of which is stationed in the former country and two flights allocated to Amman.

PERSONNEL.—The decision to spread over a longer period the building up of the Home Defence Force has made it possible to maintain approximately stationary the numbers and cost of *personnel* during the coming year. Further progress has been made in economising the use of officers.

The cost of the medical services will be approximately the same as last year, Vote 5 showing a saving of £8,000 on the gross total and an increase of £5,000 on the net total. The main reduction effected in the Estimate has been in the provision for medical services in the Middle East—a reduction which does not affect net Air Votes.

A saving of over £50,000 has been effected in the cost of educational services (Vote 6). This decrease is largely the result of a close investigation into the establishments of the two great training stations, Halton and Cranwell; the economies are administrative and do not impair the training curricula. The number of apprentices at Cranwell is further reduced, newly entered aircraft apprentices being trained at Halton.

RESERVE AND AUXILIARY FORCES.—Now that the supplementary source of recruitment for the Reserve of Air Force Officers from amongst qualified pilots trained during the late War is practically exhausted, an experimental scheme has been launched for the enrolment of young men, and their training *ab initio* as pilots, in the Reserve.

A beginning has been made with the formation of Special Reserve and Auxiliary Air Force squadrons, and these squadrons will, as already mentioned, be further developed during the year.

During the latter part of 1925 provision was made at the Universities of Oxford and Cambridge to enable members of those Universities to obtain knowledge and experience of all matters connected with aviation. The object of such courses is to influence the flow of candidates for commissions in the R.A.F., the Air Force Reserve and the Auxiliary Air Force, to stimulate interest in air matters generally at the Universities, and to promote and maintain a *liaison* with the Universities in technical and research problems affecting aviation.

RESEARCH AND TECHNICAL DEVELOPMENT.—The research and experimental services show a net increase of £19,000, largely accounted for by the addition which it has been found necessary to make to the staff concerned with the stressing for airworthiness of service and civil aircraft.

It may be mentioned that a number of experimental machines has been ordered embodying the principle of the Cierva autogyro, of which a preliminary test was recently carried out at Farnborough. The offer of a prize for a helicopter which was announced some two years ago comes to an end on April 30th next; a number of entries has been received, but no machine has yet passed any of the tests. It has been decided to close down the attempt (initiated by the Ministry of Munitions during the War) to construct a helicopter in a Government establishment to the design of, and under the supervision of, Mr. Louis Brennan, C.B., whose distinguished abilities as an inventor have been often demonstrated in the past.

METEOROLOGY.—On the purely scientific side, valuable work is being done on such subjects as atmospheric electricity, terrestrial magnetism and seismology, especially at the Kew and Eskdalemuir observatories.

It has been found necessary to reorganize the forecast service at Headquarters. It is now possible for an aviator, in any part of the country and at any time, to obtain within a few minutes a report on the weather conditions along any air route and a forecast of the probable changes in the course of his journey.

PROMOTIONS.

PROMOTION FOR SERVICE IN THE FIELD.—Wing Commander R. C. M. Pink, C.B.E., was promoted to the rank of Group Captain on 1st January, 1926, in recognition of his distinguished services in the field in Waziristan during the operations of March—May, 1925.

ORGANIZATION, TRAINING AND DEVELOPMENT.

R.A.F. STAFF COLLEGE.—The students attending the fourth course at the R.A.F. Staff College took part in a combined operation staff exercise with the students of the Royal Naval and Army Staff Colleges. The exercise was held at Camberley between the 15th and 20th March, 1926.

The fourth course at the R.A.F. Staff College ended on 26th March; the fifth course is due to start on the 10th May next.

OFFICERS' PROMOTION EXAMINATION.—The qualifying promotion examination for officers was held in Commands at home and abroad on the dates as shown below :—

Examination "B." Flying Officer to Flight Lieutenant, 27th, 28th and 29th January, 1926.

Examination "C." Flight Lieutenant to Squadron Leader, 27th, 28th, 29th and 30th January, 1926.

The next promotion examination will be held in July, 1926.

AWARD OF COMMISSIONS AND FLIGHT CADETSHIPS TO AIRMEN.—Three airmen who have served in the post-war Air Force as pilots were appointed to permanent commissions with effect from 1st March, 1926. These are the first direct appointments to commissions from the ranks since the war period, but a limited number of ex-aircraft apprentices have been, and are being, selected for cadetships on the results of the passing-out examination. Six cadetships were granted under the latter scheme as a result of the examination held in December, 1925.

SPECIALISATION OF SHORT SERVICE OFFICERS IN ENGINEERING.—A competitive examination will be held in July next, with a view to the selection of

ten short service officers of the General Duties Branch to undergo the long (2 years) course in engineering at Henlow. Officers selected will be granted permanent commissions.

NAVAL CO-OPERATION.

Fleet Air Arm flights embarked in the aircraft carriers attached to the Atlantic and Mediterranean Fleets took part in the combined exercises of these fleets in the latter part of March.

Fleet Air Arm flights disembarked both at Home and at Malta have carried out a continuous programme of training.

In Home waters, also, the Flying Boats of 480 Flight have carried out their customary training and patrol exercises from Calshot.

No. 481 Flight at Malta (Fairey III.D Floatplanes) have co-operated as usual with the Naval and Military units stationed at Malta, and have continued their normal routine of training and exercises.

ARMY CO-OPERATION.

R.A.F. Squadrons in India carried out a considerable amount of Army co-operation during Northern Command Manœuvres. Nos. 5, 20, 27, 31 and 60 Squadrons carried out over 400 hours flying.

OVERSEAS COMMANDS.

EGYPT AND SUDAN.

On 1st March, a flight of four Fairey III.D Aircraft, under the command of Wing Commander C. W. H. Pulford, O.B.E., A.F.C., left Cairo on a flight to Capetown and back. South of Khartum severe storms were encountered and these delayed the flight for one day. At Tabora, a day was spent carrying out co-operation with the 2nd King's African Rifles.

At the time of writing, 2nd April, the flight has reached Pretoria and is keeping up to programme time.

CAIRO-BAGHDAD SERVICE AIR MAIL.—Air route duties have been carried out as follows :—

<i>November</i>	.. Aircraft	.. 8 Vernon			
	Passengers	.. 18 R.A.F.	.. 2 Army	.. 1 Civilian	
	Mail	.. 1,056½ lbs.			
<i>December</i>	.. Aircraft	.. 7 Vernon	.. 6 Vimy	.. 1 Victoria	
	Passengers	.. 9 R.A.F.	.. 5 Army	.. 4 Civilian	
	Mail	.. 1,836 lbs.			
<i>January</i>	.. Aircraft	.. 6 Vernon	.. 3 Vimy		
	Passengers	.. 10 R.A.F.	.. 3 Army	.. 1 Civilian	
	Mail	.. 1,181 lbs.			

In addition to the normal mail duties several special flights have been made over the route, the passengers, including King Feisul and his staff, the Emir Zaid, who acted as Regent in Iraq during King Feisul's absence in England, Sir Henry Dobbs, High Commissioner of Iraq, and Sir Gilbert Clayton, who had gone as H.M.'s representative to conclude a treaty with Ibn Saud, Sultan of Nejd.

On the 16th January, a Vickers Vernon, of No. 45 Squadron, made the flight from Heliopolis to Hinaidi in one day.

During February, the detached flight of No. 47 Squadron, which is stationed at Khartum, was engaged in a minor punitive operation against certain disaffected tribes in the Nuba Mountains area. The flight moved to an advanced base at Dilling, 310 miles south west of Khartum, and from February 4th to 7th, co-operated with two columns of native troops. The operations, which were of a minor nature, were successful and the flight returned to Khartum during the second week of February, having carried out eighteen hours operational flying.

INDIA.

No operations have been carried out during the period under review.

During October, Their Majesties the King and Queen of the Belgians visited several Royal Air Force Stations in India. H.M. The King made a tour of the frontier by air, while he and the Queen made several journeys by air between the various frontier stations and towns in the North West Frontier Province.

During the Northern Command Manœuvres in November, Nos. 5, 20, 27, 31 and 60 Squadrons carried out over 400 hours flying and accomplished a considerable amount of co-operation work with the Army.

IRAQ.

GENERAL.—With the exception of the Sulaimaniyah area, the situation has remained quiet during the last three months and no punitive air operations have taken place.

SULAIMANIYAH.—Shaikh Mahmoud has continued to resist Government authority, but his activities have been confined to petty brigandage and endeavours to collect taxes from the villages in the area. These activities have been successfully kept in check by co-operating ground and air forces.

IRAQ-NEJD FRONTIER.—The shepherd tribes grazing their flocks near the Iraq-Nejd frontier have been apprehensive of the Akhwan raids, which are usual at this time of the year. However, none have taken place. Aeroplane and armoured car reconnaissances have patrolled the area, thus reassuring the tribes and acting as a deterrent to possible raiders.

DESERT MOTOR ROUTE.—For the early part of the year, owing to the unsettled state of Syria, the Nairn Transport Company desert motor service have been using the route via Jerusalem and Amman to Baghdad. Since the 18th March, however, the French considered it safe to travel through Syria, and the route Beirut—Tripoli—Homs—Palmyra has been used. The Syrian portion of the route is crossed in daylight, the French patrolling with armoured cars.

PALESTINE AND TRANSJORDAN.

During December the Jebel Druze situation improved and so enabled the Royal Air Force work in Palestine and Transjordan to be resumed on normal lines. Training and co-operation work with the local forces has been carried out.

BRITISH CIVIL AVIATION.

***NEW TYPE OF AIR LINER.**—One of the very latest types of giant air liners is the "Argosy," which has recently been completed in Coventry by Messrs. Sir W. G. Armstrong-Whitworth Aircraft, Ltd., for use on the long-distance services of Imperial Airways, Ltd.

This huge aeroplane, which carries twenty passengers and luggage, is propelled by three Armstrong-Siddeley air-cooled Jaguar engines developing a total of nearly 1,200 h.p. The top speed of the aeroplane is 110 m.p.h., while the usual cruising speed is from 90 to 95 m.p.h.

Up till quite recently the majority of commercial aircraft has had to rely on one engine, with the result that an engine failure meant a forced landing. On this design, however, the possibility of forced landings has been practically eliminated with the introduction of triple engines and the aeroplane is capable of flying comfortably with one engine out of action.

The great size of this plane can be judged from the fact that the tyres and wheels are almost as tall as a man's shoulders, while the pilot's compartment is situated so high up in front of the machine that a full-sized car can be driven underneath it quite easily. There is an exceptional amount of room for passengers, who sit in comfortable wicker chairs in a compartment some twenty-nine feet long and about six feet high.

Spacious windows, level with the passengers' heads, extend the entire length, on either side of the cabin. For night flying electric light is provided, while instruments are fitted so that the passengers can see the speed and height at which the aeroplane is travelling. A lavatory adjoins the main cabin, while another compartment, which is located nearer the tail, carries the luggage.

The two pilots sit side by side and well in front of the aeroplane, so that they have an excellent all-round view. As the controls are duplicated, either pilot can control the machine or rest if need be. Immediately behind them is a space which contains the wireless outfit.

The total weight of the aeroplane when fully loaded is nearly eight tons, of which two tons are paying load. Enough petrol to fly 400 miles is stored in tanks on the top plane. The aeroplane will leave the ground after a run of not more than 350 yards, and will reach its normal cruising height of 3,000 feet in about five minutes.

MR. COBHAM'S FLIGHT TO THE CAPE.—The completion of Mr. Cobham's flight to Capetown and back on 13th March adds another important achievement to the credit of British aircraft and engines. The principal value of this flight and of the various foreign flights made recently in which British engines have been used, such as Commander Franco's flight from Spain to Argentina, lies in the interest they arouse in British aviation material amongst the nations who depend on outside sources for their aircraft. To-day the competition among the aircraft producing nations to secure these markets is keener than it has ever been, and the British manufacturers have therefore every reason to thank Mr. Cobham for once again organizing and carrying to a successful conclusion an enterprise that attracts the attention of the whole world.

Mr. Cobham left London on 16th November. The early part of his journey was delayed owing to the time taken to provide supplies of a suitable fuel along the route. He reached Capetown on 17th February, flying by way of Pisa, Athens,

*See photograph facing page 323.

Solum, Cairo, Khartum, Mongalla, Kisumu, Abercorn, Broken Hill, Bulawayo, Pretoria, Johannesburg, Kimberley and Bloemfontein.

His return journey was accomplished in 15 days in spite of the fact that he was delayed on three occasions by water-logged aerodromes, sandstorms and gales. The fact that he arrived home in England before the arrival of the liner "Windsor Castle," which left Capetown on the same day, seems all the more remarkable when it is remembered that the route of the ship was 2,000 miles shorter than the route followed by Cobham, and that she was steaming night and day without interruption by climatic conditions. For his services to aviation, Mr. Cobham has been awarded the Air Force Cross.

RECORD OF ACHIEVEMENT.—It is of interest at the present stage, when air transport promises to take a big step forward, to look back on the work of the British air lines in the past. From August, 1919, when the cross-channel services began, up to the end of 1925 a total of 54,420 passengers have been carried to or from the Continent besides 29,690 by foreign services. During 1925 one individual passenger made 40 crossings in the course of business trips. Freight traffic has increased steadily, particularly the carriage of precious metals. Since Imperial Airways started operations on 1st April, 1924, it has carried gold and precious metals to the value of £10,000,000 without loss of any kind. The insurance of precious metals carried by air is actually cheaper than for other means of transport owing to the smaller risk of theft and pilferage. On occasions, too, the despatch of baser metals by air has been found profitable by business houses. For example, a bulk sample of quarter ton of pig iron was sent to Belgium in connection with an urgent tender. At the present time silk goods from Lyons are being brought by air from Paris to London at the rate of a ton a week and several other classes of goods are established as regular air freight.

The pilots employed have naturally accumulated a valuable experience of regular air line flying. The majority of them have made over 2,000 crossings of the Channel. One at least has completed 3,000 crossings and another has piloted 15,000 passengers across the Channel.

The machines used have put up records of durability previously believed impossible. Four D.H.34 machines, of a type now being superseded, have flown on an average about 300,000 miles each (equal to 12 times round the world) during their life of three and a half years. After all this flying they are still in good condition and completely satisfy the strict requirements of the Air Ministry as to airworthiness. They are, however, giving place to multi-engined machines, with which it is hoped that forced landings through engine trouble will be even fewer than in the past.

LIGHT AEROPLANE CLUBS.—The five light aeroplane clubs that have already been sanctioned are all hard at work training members. The London Club has trained a lady member who has taken her "A" (private flying) licence and is qualifying for a "B" (public transport) licence in readiness for the time when the latter licences will be granted to women. At present, under the terms of the International Air Convention the public transport licence is issued only to males, but the question of granting it to women also is being taken up before the International Commission for Air Navigation.

A proposal has been put forward by a body which has established itself as a light airship club, requesting Government recognition and aid similar to that given to the light aeroplane clubs. It is suggested that a small non-rigid airship

shall be acquired and a certain amount of accommodation placed at the disposal of the club. The club has been presented with a balloon which it intends to enter in the Gordon Bennett race this year.

AVIATION IN FOREIGN COUNTRIES.

AFGHANISTAN.

During the Russo-Afghan frontier affair at Urta-Tagai the Russian personnel in the Afghan Air Force were suspended but they have since returned to duty. No flights took place between 31st December, 1925, and 9th February, 1926, since which date flights have taken place about once a week.

Five Afghan youths are reported to be undergoing training as pilots at Kabul.

All the flying is carried out by the D.H.9's and D.H.9A's. The two Avros and two D.H.9A's which were sold by Captain Murphy to the Afghan Government were severely damaged by a storm last May, and have been lying unattended at Peshawar ever since. It is now proposed to tow the two D.H.9A's and one Avro by road to Kabul. The remaining Avro is a complete wreck and it is not likely that this will be taken to Kabul.

BALTIC STATES.

The air service of each of the three Baltic States (Estonia, Latvia and Lithuania) has the status and organization of a regiment. Owing to lack of finance these air services cannot at present hope to fill any other role than that of being ancillary to the Army.

Estonia has about six seaplanes of British type and of its landplanes (including training machines) approximately 50% are British, 25% German and 25% French.

Latvia has about six seaplanes of Swedish, Italian and French types and of its landplanes (including training machines) approximately 40% are British, 40% Italian and 20% French.

The Lithuanian air service, which is more than twice as large as that of either of the other two States, comprises over 100 officers, 1,000 other ranks and 70 aeroplanes (including training machines) of German types. It has no seaplanes.

Latvia and Lithuania are making every endeavour to commence building their own aircraft locally and have taken steps to organize, with foreign assistance, aircraft factories to this end at Libau and Memel respectively. Estonia appears content at present to purchase her aircraft abroad. Owing to the fact that their craftsmen, though highly skilled woodworkers, are inexperienced in working in metals these States are dependent on foreign countries for their supply of aero-engines and on foreign assistance should they decide on the construction of all-metal aircraft. Some degree of efficiency has been attained by all three States owing to the presence in the senior ranks of airmen with experience gained in the Imperial Russian armies.

DENMARK.

DANISH MILITARY AIR SERVICE FLIGHT FROM COPENHAGEN TO TOKYO AND BACK.—The Danish Military Air Service on a flight from Copenhagen to Tokyo and back, are using two of the four Fokker CV (2-seater long distance reconnaissance biplanes, each fitted with a 400-h.p. Lorraine Dietrich engine) recently

ordered by them from Holland. It is stated that half the cost of the expedition will be borne by the Danish Ministry of War and half by the Danish East Asiatic Company.

The proposed itinerary is via Berlin, Lemberg (Lwow), Constantinople, Aleppo, Baghdad, Bushire, Bandar Abbas, Karachi, Agra, Calcutta, Rangoon, Bangkok, Hanoi, Canton, Shanghai, Peking, Tokyo. The machines are expected to be back in Copenhagen again about the middle of June (i.e., after a period of three months).

The machines have been fitted with larger petrol tanks and with dual control, and a number of modifications have been made to the machines to suit the variations of climate on the route. They have been given a type letter R, and are numbered 1 and 2. Spare engines and aeroplane spares have been despatched to Karachi, Bangkok and Tokyo.

The pilots are two Danish army officers, Lieutenants Herschend and Botved, who are accompanied by N.C.O. mechanics Olsen and Petersen respectively.

The flight was scheduled to start on 15th March. But on 8th March, during a trial flight, R.2, whilst landing, damaged its undercarriage, with the result that it also broke its airscrew. It was then decided to fit both machines with stronger undercarriages.

The machines started from Copenhagen at 11 a.m. on 16th March, 1926, and reached Berlin at 1.30 p.m. the same day. Flying via Constantinople, Aleppo, Baghdad, Bushire (26th March), Bandar Abbas (27th March), Karachi (28th March), Agra (30th March), they reached Calcutta on 31st March. On 21st March, whilst flying from Constantinople to Aleppo, Lieutenant Botved, was compelled by foggy weather to land at Eski Shehr, but he rejoined Lieutenant Herschend at Aleppo the next day.

No further information about the flight is available at present.

FRANCE.

ESTIMATES.—The estimates as presented in November, 1925, have not yet been finally approved; cuts have been made both by the Finance Commission of the Chamber of Deputies and by the Chamber of Deputies. Included in the amount asked for by the Military Air Force is a sum of 100,000,000 francs for material which, though bought during this financial year, will be paid for in subsequent budgets. The figures for 1925 and 1926 were given in last February's JOURNAL.

MILITARY AIR SERVICE.—Approximately 165,000 hours' flying was carried out during 1925, in the course of which 219 machines performed flights of between 650 and 1,300 miles, and 66 machines did flights of over 1,300 miles. These aircraft were all of Service type with Service personnel, although a number of the flights were executed in one or other of the competitions that are open to the Air Services, such as the Coupe Breguet and the Military Zenith. These flights were not non-stop, and the longest was 2,725 miles.

NAVAL AIR SERVICE.—The establishment of squadrons has been reduced to six machines. During 1925 the Naval Air Service flew 14,227 hours.

LONG-DISTANCE FLIGHTS. PARIS—TEHERAN—PARIS.—The flight referred to in the last two numbers of the JOURNAL has been completed, and it now appears that only three aircraft successfully completed the double journey.

Four machines, three of them Breguet XIX's, each with a different type of engine, and one Potez XXV, started from Paris on 5th November, 1925, and three returned on 17th January, 1926. The three successful pilots were:—

Captain Girier on a Potez XXV. 450-h.p. Lorraine engine.

Lieutenant Challe, on a Breguet XIX. 500-h.p. Farman engine.

Lieutenant Rabatel, on a Breguet XIX. 450-h.p. Hispano-Suiza engine.

This was not a high speed flight but a journey in formation, undertaken in order to test the different machines and engines employed therein during the least favourable season of the year under Service conditions without any spare parts beyond those carried in the machines. Stops of varying duration were made at all places of importance on the route, which was via Paris, Novi Sad, Bucharest, Constantinople, Aleppo, Baghdad, Teheran. At Teheran, Prince Amanollah, Chief of the General Staff, and General Abdullah-Khan, Minister of War, were taken up as passengers, and the sacred mountain of Demavend was circled.

The return journey was made via Athens and Rome in very bad weather, the very indented coast line of Greece having to be followed owing to low clouds. Eventually two machines were forced to land in Albania, where they were well received by Nuredin Vlora Bey.

The 9,500 miles were covered in about 100 hours flying time without any trouble from either engines or aircraft.

It is interesting to note that the actual engines used had already performed very useful service. The Farman engine was transferred without overhaul from the machine that had made a record non-stop flight of forty-five hours. The Hispano-Suiza engine was the one that had done the official test of forty hours' full throttle. The Lorraine engine and the Potez XXV in which it was installed were those used by Captain Arrachart in his three days' tour of Europe: Paris, Constantinople, Moscow, Paris. (See "Air Notes" in JOURNAL of November, 1925).

GERMANY.

ESTIMATES.—The following details of the German Air Budget for 1926 were recently published:—

	Gold Marks.
1. Organizing of Exhibitions and the provision of money prizes at competitions, etc.	2,580,000
2. Meteorological and Route Maintenance Service	1,090,000
3. Scientific and General use	5,970,000
4. Cost of the "Deutsche Versuchsanstalt (Research Establishment), Adlershof (including 1,000,000 marks for the transfer of the station)	1,850,000
5. Subsidies for air traffic companies	8,371,500
6. Providing time tables, tickets and the attaining of the greatest regularity of operation	3,050,000
7. Subsidies for gliding and light aeroplane service	3,600,000
Total	26,511,500
	(£1,325,575)
The corresponding total for the financial year 1925-26 was	24,157,500
	(£1,207,875)

COMPETITIONS DURING 1926.—The Deutsche Luftfahrt Verband (German Aeronautical Society) proposes to hold the following competitions during 1926:—

12th–16th May "Süddeutschlandflug."

July "Seeflugwettbewerb" (Seaplane Competition—details of which appeared in the JOURNAL for February, 1926).

October "Nordwestdeutscherflug."

In addition to the above the annual gliding competitions on the "Wasserkuppe" (Rhön) will be held from 25th July to 9th August, for which prizes to the value of 12,700 gold marks (£635) will be awarded.

HOLLAND.

DUTCH EAST INDIES.—The Air Service in the Dutch East Indies is at present divided into Naval and Military wings, which are administered from the Admiralty and War Office respectively.

The whole Naval wing is stationed at Soerabaya, to which it moved in 1925. It consists of approximately twenty machines, mostly Brandenburg seaplanes. The number of officers in the Naval wing is about twenty, of whom one half are pilots.

A certain amount of night flying training has been carried out at Soerabaya, but it has not proved altogether successful.

The Military wing consists of:—

- (1) Two squadrons stationed at Andir of approximately 25 machines. Types—D.H.9, Fokker and Koolhoven.
- (2) Flying training school at Kalidjati. Types—Avro 504K, D.H.9 and Fokker.

The number of officers in the military wing is about fifty, of whom approximately thirty are pilots.

ITALY.

SEAPLANES ON WARSHIPS.—The Ministry of Marine has issued temporary regulations relating to seaplanes to be carried on warships.

Five ships are to carry one Macchi M.18 flying boat each, and four others one Macchi M.7 flying boat each. The Air Force personnel is to consist of a pilot, a fitter and a rigger for each machine. Observers for the M.18's will be supplied by the Navy. As it is not at present possible to carry the aircraft on board permanently, they will be embarked only during special periods of activity, and at other times will remain at the seaplane stations of Spezzia, Taranto, and, if necessary, Nisida (Naples).

PERSIA.

AIR POLICY.—Up to the present the Persian Government has viewed its Air Force principally from the point of view of its value as a factor in internal security. They have found it valuable for purposes of rapid communication, and also on account of the moral effect of bombing on recalcitrant sections of the population. The Persians, however, have found the cost of upkeep an extremely heavy strain on their resources, and as far as can be ascertained, they have at present no more ambitious programme than the maintenance of enough aircraft to provide a means of fast communication in times of crisis, and for punishing rebellious subjects.

STRENGTH.—Persia has recently received two Russian aircraft of a D.H.9 type, and has now a total of seventeen machines, four of which are for instructional purposes and one a seaplane based on the Caspian Sea. Of this total, several are unserviceable. These aeroplanes are of Russian, German and French construction, and are flown and maintained by pilots and mechanics of those nationalities, with the assistance of three Persian pilots who have been trained abroad.

SPAIN.

SPANISH TRANS-ATLANTIC FLIGHT.—The Trans-Atlantic flight mentioned in the last JOURNAL was successfully completed, and was a fine performance on the part of Commandante Franco and his companions. As already stated, the machine used was a Dornier Wal flying boat built by the Dornier Company in Italy, and fitted with two 450-h.p. Napier Lion engines. The machine and engines gave complete satisfaction throughout the journey.

Favourable weather was experienced except at Fernando Noronha. The party alighted at this place at 7.45 p.m., but owing to a storm and the heavy surf, they were forced to spend the night in the machine. During the night, waves damaged the rear propeller. It was, however, found to be fit for use in the morning, but later became useless, the remaining 100 miles to the mainland being completed on one engine only.

The following is the log of the flight :—

			Distance	Time
			In Miles.	H. M.
Jan. 22.	Palos de Moguer—Las Palmas	..	817	7 35
„ 26.	Las Palmas—Cape Verde	..	1,057	9 47
„ 30.	Cape Verde—Fernando Noronha	..	1,432	15 45
„ 31.	Fernando Noronha—Pernambuco	..	335	3 40
Feb. 4.	Pernambuco—Rio de Janeiro	..	1,265	12 10
„ 9.	Rio de Janeiro—Montevideo	..	1,270	11 15
„ 10.	Montevideo—Buenos Aires	..	112	1 9
Total			6,288	61 21

Commandante Franco was anxious to continue the flight along the West Coast of South America to Panama, and then via the United States, Canada, Newfoundland, South Greenland, Iceland, British Isles, to Spain. The Spanish Government, however, refused permission, and the airmen returned to Spain by boat.

UNITED STATES OF AMERICA.

DEVELOPMENT OF THE CATAPULT.—On 27th February a further phase in catapult development was achieved. A three-seater Loening Amphibian plane was successfully catapulted at Hains Point in the face of a wind of 30 m.p.h. from a 55-foot track set on a barge about 14 feet above the water line. As far as is known, this is the first time that an amphibian has been catapulted.

AIRSHIP NOTES

GREAT BRITAIN.

THE AIR ESTIMATES, 1926-7.

AIRSHIPS.—The Air Estimates for the current financial year carry the programme initiated by the late Government into its third year. This programme is divided into two parts: (1) Airship development under the direct control of the Air Ministry, including the construction of a 5,000,000 cubic feet airship at the Royal Airship Works at Cardington; and (2) Construction of an airship of the same capacity by a private company at a cost of £350,000.

The Air Ministry programme has been considerably retarded by the break-away of the "R.33" in April last. Although the resulting experience was of considerable value, the refit of the airship delayed the carrying out of the projected series of experimental flights until the latter part of 1925.

In consequence of the urgent need for economy, it has been decided, whilst the main lines of the programme will be kept intact, to spread its completion over a longer period than was originally contemplated; a flight by one of the existing airships to Egypt, which was originally planned for 1926, will not now be carried out, since the experience to be gained by it, though desirable, is not considered essential; arrangements are being made for the disposal of all Air Force and civilian personnel whose services are not likely to be required for the next year or so; and Pulham Air Station is being put upon a care and maintenance basis. As a result of these economies, the net provision for all airship expenditure in current estimates is reduced to £335,000.

"R.33."—At the end of 1925 "R.33" was deflated and no active flying operations have been carried out during the present quarter.

Development as a Carrier.—As the result of the successful airship attaching and detaching trials with a light aeroplane, investigations are being made as to the mechanism required to launch a modern fighter machine.

"R.101."—*Test Section.*—The girders for the test section of "R.101" are due for delivery during April and all the necessary staging has been erected in the shed for the work of assembly to proceed without delay.

Fabric Tests.—A number of gasbag fabric samples which have been exposed under tropical conditions in Egypt and India have been returned and are now being examined. Further exposure tests are now in progress and the results of the information thus obtained will be incorporated in the set of gasbags for "R.101."

AIRSHIP STATIONS.—*Cardington.*—Satisfactory progress has been made on the shed extensions during the last quarter and the alterations should be completed early in May.

Mooring Mast.—The structure has been completed and arrangements made for mounting the receiving arm. Trials of the latter have taken place at the makers' works and erection will be commenced as soon as minor modifications have been incorporated.

The hauling-in machinery has been installed at the foot of the mast and preliminary trials will take place shortly.

Egypt.—*Mast.*—The steel girder work of the mast has been erected and the receiving arm is awaited before the tests of the structure, hauling-in machinery and other equipment can take place. The silicol hydrogen plant has been completed and is now undergoing trials. It is anticipated that the base will be completed by the middle of the summer.

India.—In connection with the Karachi base, a considerable amount of work on the subsidiary services, such as roads, railway siding, water supply, etc., has been carried out and these will be finished at an early date in order that such facilities may be available for the shed contractors. The main foundations and preliminary work on the shed have been commenced and a considerable amount of steel work is ready for shipment.

METEOROLOGICAL.—A special airship Meteorological Section is investigating the weather conditions on the Indian route and planning the necessary organization for flying operations. The work entailed is considerable as upper air investigations have to be made at selected places at various times of the year.

ITALY—NORWAY.

THE ARCTIC ENTERPRISE OF THE "NORGE I."—The Arctic flight by the Italian semi-rigid airship "Norge I," alluded to in the February JOURNAL, commenced with the departure of the airship from Rome at 9.25 a.m. on 10th April.

The first stage of the journey extended to Pulham. As the airship was to be actually housed at that station and not merely anchored to a mast, weather conditions at the time it would be due to arrive had to be carefully studied. The Airship Meteorological Division of the British Air Ministry supplied weather reports and forecasts at short intervals, both before and during the flight. It was due to unfavourable reports of conditions on the East Coast of England that the departure was delayed for twenty-four hours.

The course followed was across the Northern end of Corsica to Toulon and thence along the coast to Narbonne, from where the airship headed to the North across France. At midnight on the first day, the "Norge I" was over Rochefort, where it had originally been intended to land and refuel, but conditions were so favourable it was decided to stand on direct for Pulham. At 11.20 a.m. on the morning of the second day she was reported in the vicinity of Brighton. The original intention to fly over London was abandoned and the Thames was crossed further to the eastward. Pulham was reached soon after 2.30 p.m., but owing to peculiar weather conditions, several attempts were made before the airship was safely landed at 5.50 p.m. and walked into the shed.

The average height maintained during the voyage was 1,000 feet. The wind had been favourable until about 9.30 p.m., and speeds up to 70 miles per hour were attained, but conditions gradually changed and twelve hours later the "Norge I" was reported over Cape La Hogue, travelling against a strong north-east wind. The 1,400 miles were eventually covered in about 30 hours, giving an average speed of 47 miles an hour.

After refuelling, ballasting and filling up with hydrogen, the airship left Pulham at 11.45 p.m. on 13th April for Oslo in Norway, where it arrived safely the following afternoon. The weather conditions were so favourable that it was decided to leave for Leningrad that same night. Actually, the departure took place at 1.10 a.m. on the morning of 15th April, and the airship arrived at Gatchina in the outskirts of Leningrad at 7.30 p.m. the same evening. It was housed in the airshed.

The "Norge I" arrived at King's Bay, Spitsbergen, at 6.30 a.m. on 7th May.

On 13th May, information was received that the "Norge" had flown over the North Pole.

UNITED STATES.

"R.S.1."—Reported to be the world's largest semi-rigid airship, "R.S.1" made its test flight on 8th January, landing safely after an hour's cruise in a mild snowstorm. A crew of eight men, excluding the pilot, was carried, and a successful flight was reported. The average speed of the ship was 40 miles per hour; she is designed for a maximum speed of 70 miles per hour.

A test of much greater severity was made on 28th January, when the airship successfully withstood a storm with a wind velocity which at times reached 51 miles per hour. On this occasion the airship was aloft 19½ hours.

All the structural parts of the airship were built by the Goodyear Airship Company, of Akron, Ohio, and after completion were despatched to Scott Field, the United States Army Air Service lighter-than-air Station, where the ship was assembled.

A delay of at least six months in the completion of the ship was caused through a tear in one of the ballonets being discovered after the partial inflation with 500,000 cubic feet of helium had taken place, and a further cause was due to an error in the rigging.

The "R.S.1" is powered with four 300-h.p. Liberty engines, its length is 282 feet and it has a capacity of 755,500 cubic feet. The gas used for its inflation is helium.

The airship is of the Italian Forlanini design, and advice in the fundamentals of construction were given by the Italian Aeronautical authorities.

The "T.A.5," a non-rigid training airship belonging to the U.S. Army Air Service, made its first test flight on 7th January, 1926. While flying at Hampton Roads on 12th March, engine trouble developed and the airship nose-dived in the sea. All the crew were saved. This type of non-rigid is powered with two 70-h.p. Curtis engines, and has a capacity of 130,000 cubic feet. It was built by the Goodyear Company.

REVIEWS OF BOOKS

The Perils of Amateur Strategy. By Lieut.-General Sir Gerald Ellison, K.C.B., K.C.M.G. (Longmans, Green & Co., Ltd.)

At the present time, when the administration and co-ordination of the control of the fighting Services are being much discussed, General Ellison's book comes as a timely warning against the setting up of any machinery for the higher conduct of war, which does not give the professional element due weight and power.

The author's recapitulation of the ill-timed enthusiasms, the inconsequent impulses, the specious loquacity and the sullen silences which combined to launch the ill-fated Dardanelles campaign, mostly serves to refresh our memories; he does not add greatly to the store of knowledge of those who have studied its history. On the other hand, he marshals his facts into a sweeping indictment of a system which enabled war to be conducted in such a chaotic fashion.

Here and there he shows himself curiously out of touch with naval matters. For instance, he alludes to Lord Fisher's Baltic project as if it was the well-matured scheme of a great naval strategist, whereas it is common knowledge amongst students of naval warfare that the old First Sea Lord's plan for a great coup on the North Coast of Germany was as visionary as that of the War Council when, on the 28th January, 1915, they came to the puerile decision that "an attack should be made by the fleet alone with Constantinople as its ultimate objective."

There was, however, this fundamental difference, the Government precipitated action without adequate forethought; Lord Fisher's project never materialised, but those who knew him best can testify to the thoroughness of his methods. He was never wont to leave things to chance. It is fair to assume that that project, if it had proved practicable at all, would have been planned and organized to the last rope yarn or, what was far more likely, would have been found when it came to the point to have been unpracticable and therefore never attempted.

Elsewhere (page 143) the author would seem to be unaware of developments in the sister Services, for he says "doubtless if Naval and Air Staffs came into being, divorced like the Imperial General Staff from active participation in administration and finance, they and their doctrines will equally be accepted by the Dominions." The Naval Staff has, of course, long since been just as much "divorced from administration and finance" as their opposite numbers at the War Office. The Royal Air Force is a smaller Service and reasons of economy may necessitate some combination of duties, but it is understood that the Air Staff is modelled on the same general principles as the staffs of the older Services.

The Dardanelles campaign will doubtless go down in history as a great tragic example of the misdirection of war. This account shows Mr. Churchill as the chief "amateur" whose "strategy" was the product of a too vivid imagination, and a political mind, a Minister who arrogated to himself the position of Lord High Admiral, and who brushed aside any professional views which did not conform to his own desires. In a prefatory note, no less worth reading than the rest of the book, Viscount Esher defends the individual but is at one with the author in condemning the "weakness of our naval and military system."

That system is weak because it leaves too much to the fallibility of human nature. When a project of the magnitude of the attack on the Straits is being

contemplated it is clearly the business of the Prime Minister and his colleagues to see that they are properly advised; yet even Lord Fisher's obvious gesture of dissent when he made as if to leave the fatal War Council and was way-laid by Lord Kitchener did not have any effect. As General Ellison puts it, "Mr. Asquith saw that drama enacted . . . but he allowed his colleagues on the Council to reach their conclusions without drawing from the expert his opinion for their guidance." It would have been "out of order" for the First Sea Lord to have voiced his views, but a Fisher ten years younger would probably have done it. The human element failed in more ways than one.

The book closes with only the barest reference to a constructive proposal for a solution to the problem, but the need for an enquiry is made all the stronger by the fact, which the author puts in the following words:—

"Constitutionally our war system remains to-day exactly as it was in 1915. If war came to-morrow there is nothing to prevent identically the same things happening again as happened then."

This statement ought to be modified to the extent that the three Chiefs of Staff are now permanent members of the Committee of Imperial and National Defence and are definitely charged with advising the Government in a co-ordinated capacity, but, except for this, the author is right in maintaining that there are still no assurances that a War Cabinet or War Council must hear and give due weight to professional views before committing the nation and its fighting forces to a course of action. It is to be hoped that General Ellison's book will be read and appreciated as deeply outside the Services as it will be within.

The Study of War. An inaugural lecture delivered before the University of Oxford on 23rd February, 1926. By Major-General Sir Ernest Swinton, K.B.E., C.B., D.S.O., Chichele Professor of Military History in the University of Oxford. (Clarendon Press, 1926.)

The long title of this pamphlet is self-explanatory. The University of Oxford is to be congratulated on the choice of General Swinton for this post. If he continues to produce some short and apposite essays on the whole thesis of War on the same plane as his inaugural lecture, there is little doubt that not only Oxford, but the public as a whole, stand to gain thereby. For some generations the study of War has been oppressed by the cramped outlook of Clausewitz and other exponents of the Napoleonic doctrines. We are now on the brink of a new era when War threatens to assume another form and another significance. Economic, psychological, chemical processes will one day—and that soon, perhaps—be recognised as exerting as great an influence in the warfare of the future as the rifle and the bayonet in the warfare of the past. Under this head alone General Swinton's lecture deserves wide study. We trust that we shall see more of his reflections on this great theme. Meanwhile we must be content with his valuable contribution to modern thought on things military.

The History of H.M. Navigation School, 1729-1926. By Lieutenant R. K. Dickson, R.N. (Private Circulation.)

This brochure of fifty-four typewritten pages, traces the history of the old building in H.M. Dockyard, Portsmouth, which is now used as the Navigation School.

A list of the principal authorities consulted is included, and a glance at them shows that considerable research has been made to ensure that the history is complete and accurate.

The building, which dates from 1729, was until 1806, styled "The Naval Academy." It then became "The Royal Naval College," and retained this title until the opening of Greenwich College in 1873, when the name was changed to "The College, Portsmouth." In 1906, when the accommodation in H.M.S. "Mercury" was found to be inadequate, the Navigation School was moved to this old building, which has since been known as "H.M. Navigation School."

The building has been intimately connected with Naval education in general:—

"The subjects taught within its walls have ranged from the higher mathematics to dancing, and the exercise of the firelock. It has seen the rise, and was in itself the nucleus, of all that we now mean by Naval Education. The history of the need which created it, and of the controversies which surrounded it has descended in a direct line through the stories of the 'Illustrious,' the 'Britannia' and Osborne to the present colleges of Dartmouth and Greenwich, and it is from its experience that there has grown up that vast and complex system of technical schools which we know to-day."

The history not only deals with the building, but is also a study of naval education, which has been so closely associated with the establishment. Much information is given concerning the scholars, the curriculum, and the staff; moreover, although it was not easy to obtain local colour, a general idea of life in bygone times is given by generous quotations from letters still extant in biographies and elsewhere.

In the early years of the nineteenth century, it was decided, by Order in Council, to "render the Academy effectual for the increased naval force." The staff, which was then increased, included a "disabled and meritorious Lieutenant" as "Housekeeper," whose duty was to provide the boys with "a decent and wholesome table." The scale of diet was certainly more wholesome than varied, for instance, the daily allowance for breakfast was one pint of milk and eight ounces of bread.

One of the most interesting parts of the history is a lucid account in the last section of the growth of, and changes in, the Navigating Branch of the Navy. The Order in Council of 15th August, 1805, is quoted. This Order emphasises "the great inconvenience experienced by your Majesty's Navy for the want of persons properly qualified to execute the duty of Master on board your Majesty's ships and vessels." The status of those entered under this Order in Council was revised in 1867, and inaugurated the system of a separate Navigating (and non-executive) Branch of the Service consisting of:—Navigating Cadets, Navigating Midshipmen (in lieu of Master's Assistant), Navigating Sub-Lieutenant (in lieu of Second Master), Navigating Lieutenant (in lieu of Master), Staff Commander and Staff Captain. This system, however, only lasted for twelve years, when, in 1879, executive officers were invited to specialise in navigating duties. There was, however, no definite standard of qualification until the foundation of the Navigation School in 1903.

This history of a building, which in the eighteenth and nineteenth centuries was the educational centre of the Navy, is of particular interest, as every executive officer in the Navy of the rank of Lieutenant and above has been, at some period of his career, accommodated there. The author deserves much credit for the painstaking accuracy with which he has compiled it.

Elementary Tactics or the Art of War, British School. By Major R. P. Pakenham-Walsh, M.C., p.s.c. (Sifton Praed & Co., Ltd., London.)

This book is an important and valuable contribution to military literature. Its object is, as the Preface states, to put in practical form the collected teaching

of the various text-books, while steering clear of any "crank" teachings. The result is a volume, which for its clear and logically progressive statement of elementary tactical problems and methods is altogether remarkable.

Although the subject matter dealt with may in a sense be termed elementary, a perusal of the Preface and the introductory chapter, together with Chapter II, on the "Principles of War," will prove that the author is qualified by much thought and study to undertake the task he has set himself. The form of the book itself is interesting. The Principles of War receive no mere lip-service. A full chapter is early devoted to them, and thereafter throughout the book they are constantly alluded to, quoted and exemplified. The first part of the book deals with the "mechanism of war" the characteristics, organization and technical employment of each arm and Service are discussed, together with the methods of Higher Organization and the Staff, which ensure the necessary co-operation and control. Then follow chapters on inter-communication, movements and quarters. The whole arrangement is logical and clear, and under the reader's eye the whole "mechanism" is put together, wheel by wheel, till finally the machine is complete.

Part II is devoted to the consideration of "the application of the Principles of War in various forms of tactical operations." Space is not available in which to discuss these very interesting chapters; it must suffice to say that the author, while strictly and religiously adhering to the official manuals, has yet managed to introduce an element of imaginative common-sense which is refreshing. These chapters are packed full of clear exposition, apt historical illustration and an obviously sympathetic understanding of the difficulties which crop up.

The third part of the book consists of eight schemes which are useful and will well repay study. Straightforward problems have been selected, to which the solutions have been carefully worked out, and a variety of terrain is introduced, though it is a pity perhaps that nothing farther afield than this island is envisaged. The maps are conveniently put up in a pocket at the back to the volume.

Before parting from this very valuable and interesting book only one criticism occurs to the reviewer, of which he is reminded by the Introduction to Part III. Reference is there made to the "art of war according to the rules of the British School." If war be an Art, surely it is well to remember that "Art has no frontiers." In other words, we must remember to look well about us and be sure that our "school" is founded on universal truths and that it continues to draw inspiration from all and every source.

History of the 40th Division. By Lieut.-Colonel F. E. Whitton, C.M.G. (Gale and Polden.)

Of the many methods of writing a divisional history, Colonel Whitton has adopted the easy narrative style which avoids meticulous detail. At the same time, he is at pains to outline the march of greater events, so that the significance of the battles in which the Division took part can be appreciated. All this is to be commended, but the description of trenches and trench warfare in general would have been no less informative if it had been woven into an account of the actual trench experience of the Division.

The 40th, as its number implies, was not one of the formations which owed its being to the patriotic fervour which greeted the outbreak of hostilities in 1914. It began to assemble in September, 1915, and was completed whilst the country was in a state of transition between voluntary enlistment and universal service. Thus all the more credit is due to those who trained the Division and served in it, for it won a very high reputation in the field.

In May/June, 1916, the 40th went to France and served its apprenticeship to active service in the Loos area. Before the end of the year it appeared on the Somme front, and, after enduring the miseries of the winter, followed up the German withdrawal to the Hindenburg Line. Then came its first offensive operation at Villers Plouich and the vicinity in April and May, 1917, when all ranks and all arms did admirable work.

But, quite rightly, Colonel Whitton has a much longer tale to tell of the Battle of Cambrai when the 40th Division attacked Bourlon Wood—an epic struggle and, perhaps, the chief glory of the Division. Heavily engaged again in the German offensive of March, 1918, the fortunes of the formation are not so easy to follow, though the personal experiences related are of absorbing interest. A more comprehensive account is given of the Battles of the Lys, but the absence of sketch maps throughout the book always makes it difficult to bear in mind the positions of the various units.

Reconstituted after its heavy losses, the Division eventually participated in the final victorious advance without being concerned in any heavy fighting. Thus its greatest days are between November, 1917, and April, 1918, and on this period the author has done well to concentrate.

In works of this nature one naturally looks for appendices in which are gathered such vital information as orders of battle, changes in command, casualties, and honours and awards. Here all these are to seek, and those interested in such matters must glean what they may from the pages of the text.

Common Mistakes in the Solution of Tactical Problems and How to Avoid Them.

By Brevet Lieut.-Colonel A. B. Bauman, D.S.O., p.s.c., The York and Lancaster Regiment. (Hugh Rees, Ltd., London.)

These notes, which deal in brief with tactical situations as generally met with in examination papers, are arranged with commendable clearness. The mistakes which, in the author's experience, are so commonly met with in solutions to tactical problems, are set out in the margin; opposite, the letterpress, in explanatory paragraphs, shows very shortly how and why such mistakes should be avoided.

The book is avowedly written to meet the requirements of those faced with "paper" examinations, and in this capacity will no doubt prove useful in directing attention to essential points, and as a guide to a purposeful reading of text books. With the exception, however, of the chapter dealing with "Attack," in which some most useful points are made, the mistakes dealt with appear in general somewhat elementary.

The notes, for instance, on Advance Guards and Rear Guards, though eminently sound, dispose of difficulties more likely to be exercising the mind of the Sandhurst Cadet than puzzling aspirants of the Staff Colleges, to whom, among others, it will be noted from the sub-title, that the book is addressed.

It is also somewhat surprising, even in the briefest examination of Tactical Problems at the present day, to find no mention of the method of A.A. Defence, nor of the employment of armoured cars.

The Print Collectors' Quarterly. Vol. XIII, No. 1, February, 1926. Military Prints by Colonel C. de W. Crookshank, M.P.

As a rule this journal is not in the habit of referring to magazine articles. No apology, however, need be tendered in drawing attention to this admirable little article which, within a few pages, sets before the reader a comprehensive

survey of what is known about military prints. Colonel Crookshank is almost a pioneer in this class of hobby; he is also the possessor of a superb collection of such prints. He writes with all the ease of a master of his subject.

Kekewich in Kimberley; being an Account of the Defence of the Diamond Fields, October 14th, 1899—February 15th, 1900. By Lieut.-Colonel W. A. J. O'Meara, C.M.G., late Royal Engineers, Chief Staff Officer in Kimberley during the Siege. (The Medici Society, Ltd.)

Cecil Rhodes, although uncrowned King of Kimberley for all practical purposes, was during the historic siege, constitutionally a mere private citizen. Kekewich, the military commandant, had been vested with full authority by the Governor of Cape Colony and by the General Officer commanding. With Kekewich therefore lay the authority and on him the responsibility. With Rhodes lay the real power, should he assume to use it, but on him rested no official responsibility. Rhodes had in fact re-created Kimberley. Rhodes in a sense owned Kimberley. There was probably not a white man in Kimberley who did not regard Rhodes as the biggest man in South Africa, and consider his personal good-will the greatest favour fortune could confer.

Kekewich, on the other hand, neither knew nor was known by Kimberley when sent there to take command a few days before war actually commenced. His army rank counted but little in such a community, and save for four companies of his own battalion, the Loyal North Lancashire Regiment and detachments of the R.A. and R.E., his troops consisted of some 700 volunteers, recruited in Kimberley itself, and 500 Cape Police. To put the matter plainly and bluntly, he could not feel assured that he could rely on his troops as a whole, sufficiently to take drastic action against Rhodes for systematic defiance of orders and open contempt for military authority.

The story Colonel O'Meara tells is in fact a tragic unveiling of the human weaknesses of the greatest Englishman of the late Victorian period. England's debt of gratitude is of the biggest magnitude for Rhodes' far-seeing vision, his dominating personality, his confidence in the mission of his race, and his tenacity of purpose. Unhappily, he had never been taught discipline or understood its value. If authority blocked his path, whether Colonial Office, High Commissioner or Commander-in-Chief, authority must be overturned, evaded or defied. It was in that spirit that, in direct defiance of the Queen's Government, he prepared the Jamieson Raid, but for which the political tangle of South Africa would have been unravelled without war. It was in that spirit that, sore with disappointment, though indefatigable in care for the welfare of the interests of Kimberley, he defied the military authorities, and endeavoured to force them to mould their plans of action in conformity with his will.

Colonel O'Meara describes fairly and clearly in this book how—to quote from General Baden-Powell's Foreword—"Kekewich's clear brain, human heart, cheery spirit, unswerving loyalty and absolute devotion to duty" enabled him to grapple with the difficulties and to pull through successfully, and the opinion may be cordially endorsed that "his methods are well worth studying by those who aspire in their turn to happy and successful leadership."

Historical Memoirs of The Royal Naval Club of 1765 and The Navy Club of 1785—now the Royal Navy Club.

The Committee of this ancient Club, or rather amalgamation of clubs, has caused a revised edition of the Memoirs to be compiled. The original memoir

was prepared in 1847, and the revision which has brought to light many new facts has been prepared by Captain E. Altham, C.B., R.N.*

The records of so ancient an institution cannot fail to be of interest. It affords a glimpse of the social customs of the tenth century naval officer, showing a side of their life that receives little attention from the historian. The first club came into being so early as 1674, at a time when club life was becoming a feature of life in London. Many army clubs—the Rota, the Calves Head, the Green Ribbon, the Friday Street Club—each providing social intercourse for particular sets of persons, were then in existence, but none, nor the contemporary Naval Club, are now alive. How long this original club lasted does not appear to be known, but in its day it must have served its purpose of "the Improvement of a mutuall Society and an encrease of love and kindness among them." It would not be improbable if the Revolution of 1688 marked its end.

Its successor was the club of 1765. The date is interesting in relation to other still-existent dining clubs—"The Club" of 1764, founded by Dr. Johnson and Sir Joshua Reynolds, and the Literary Society of a few years later. Thus the Naval Club is the second oldest of the dining clubs in London.

Originally called the "Navy Society," with the object of dining once a fortnight, the Club was founded by nine officers, of whom few are well known to history; the idea caught on, and fifteen more Captains swelled the numbers a week later. Of these many had commanded ships during the Seven Years War; more were to earn laurels in the wars that were ahead. Onslow, Duff, Hyde Parker, Shuldham, Bickerton and Richard King are among the better known, but others, whose names are less familiar, had distinguished themselves or were to do so—Vandeput, J. C. Allen, Balfour and Richard Edwards. The Club, in spite of non-payment by many members, prospered, and in time—in 1792—developed a surplus which formed the Charitable Fund which, it was agreed, should be used to assist the widows and legitimate orphans of members; and it affords pleasure to observe that on the formation of this fund a very large sum of arrears was immediately paid in. Another proposal, in the perilous year 1798, to subscribe £800 out of the funds of the Club towards the defence of the country fell through and came to nothing, the trustees of the Surplus Fund doubting the power to alienate the stock. In the course of the discussion, warm feelings were generated, three Admirals—Barrington, Milbanke and Hotham—striking their names off the list on account of the proposal being dropped.

The Club of 1785 contained a number of distinguished names among its founders—Barrington, Darby, Peter Parker, Lord Keppel, Sir Hyde Parker, Milbanke, Geary, Roddam, Hotham, Elliot, Cornwallis, Middleton, Jervis, Duncan, Keith, Calder, Borlase Warren, Alan Cardner, Nelson, Duckworth, Gamtren, Richard Strachan and Markham. Many were already members of the "Dirty Shirts"—as the older club is said to have been called. Jervis, it will be observed, had no objection to this club, though he was strongly opposed to the formation of what is now the United Service Club. The General Military Club having in 1816 invited the members of the two clubs to join in an United Club, St. Vincent, at first approved the idea of a "measure tending to harmonize the two professions"; but on further consideration came to the conclusion "that such a vast extension of military association in this free country coupled with other signs of the times, wears an unconstitutional aspect, which cannot fail to attract the attention of Parliament." The "horrid prospect of military despotism" filled his thoughts,

*The author is indebted to Mr. L. G. Carr-Laughton for his valuable collaboration in compiling these revised Memoirs.

and those of Lord Grenville, who feared that the effects of forming a military club must be mischievous. It is curious to consider that such fears should ever have existed: mischievous results have no more followed than from the naval dining clubs.

The Club, first limited to 150 members, soon had a long waiting list, and an increased membership was called for. In 1815, twenty-five were added, a similar number in 1817; fifty were added in 1820, and another five and twenty in 1830, when Commanders were first made eligible for election, though in the older club a Commander appears among the original members.

The two clubs were amalgamated in 1888 under articles of agreement. The annual dinner of the Navy Club to the First Lord and some officials of the Admiralty, the Founders' Day, Sovereign's Birthday and Trafalgar Day dinners of the 1765 Club were incorporated among its celebrations, and the Surplus Fund was vested in trustees of the United Club, who continue the charitable work which the fund provides for that purpose.

The memoir is well and clearly prepared and will be welcome to the many officers—not least to those who may have to propose the toast on the occasion of the Founders' Day Dinner.

REGIMENTAL HISTORIES

The Royal Berkshire Regiment. (PRINCESS CHARLOTTE OF WALES'.)

By F. Loraine Petre, O.B.E.

This history is the last work of Mr. Petre, who died just as it was finished. It consists of two volumes, the first giving a concise account of the first four battalions from their raising to 1914, and the second records the services of all the Berkshire battalions in the various theatres in which they served during the late War.

There were few official Regimental records of the early doings of the 49th and 66th Foot, so much of what one reads of them has been compiled from despatches, old letters, biographies, etc., and the labour of research must have been immense. The result affords much to interest the general reader, and is of great value to anyone connected with the Regiment. Though the Berkshires naturally hold the centre of the stage, it is pleasant to find due credit given to all other units who co-operated with them, which is not the case in all regimental histories. Amongst the appendices we find details of the uniform and equipment from the earliest days, the history of the colours, and an interesting account of some of the mess possessions, so it is a pity that nothing is said of any old customs that exist.

The illustrations are good, yet an animal-lover would have liked to know something of the little dog, which was evidently of sufficient importance to be depicted in the centre of the picture of the last survivors of Maiwand.

The maps are particularly clear, all irrelevant detail having been omitted.

The regiment may be congratulated on having as complete a history as any in existence, besides having one which is well written and of great interest throughout.

OFFICIAL HISTORY OF THE WAR

A typescript draft of the account of the Battles of Ypres, 1915, is now ready. The Historical Section of the Committee of Imperial Defence will be glad to send a copy to any commanding officer or staff officer who took part, who has not already received one, for comments. Application should be addressed to The Director, Historical Section (Military Branch), Audit House, Victoria Embankment, London, E.C.4.

PRINCIPAL ADDITIONS TO THE LIBRARY

February, March and April, 1926.

- THE NEW RUSSIA. By L. Haden Guest, M.P. 10s. 6d. 8vo. London, 1926.
- INDIA. By Sir V. Chirol. 15s. 8vo. London, 1926.
- IN RETREAT. By H. Read. 3s. 6d. 8vo. London, 1925.
- STRANGE ADVENTURES OF THE SEA. By J. G. Lockhart. 8s. 6d. 8vo. London, 1925.
- KEKEWICH IN KIMBERLEY (being an account of the Defence of the Diamond Fields, Oct. 14th, 1899—Feb. 15th, 1900). By Bt. Lieut.-Colonel W. A. J. O'Meara, C.M.G. 7s. 6d. 8vo. (Medici Society, Ltd.) London, 1926. (Presented by the Author.)
- COMMON MISTAKES IN THE SOLUTION OF TACTICAL PROBLEMS AND HOW TO AVOID THEM. By Bt. Lieut.-Colonel A. B. Beauman, D.S.O., p.s.c. 2s. 6d. 8vo. (Hugh Rees, Ltd.) London, 1925. (Presented by the Publishers.)
- PEGASUS, PROBLEMS OF TRANSPORTATION. By Colonel J. F. C. Fuller. 8vo. London, 1925.
- ELEMENTARY TACTICS, OR THE ART OF WAR, BRITISH SCHOOL. By Major R. P. Pakenham-Walsh, M.C., p.s.c. 10s. 6d. 8vo. (Sifton, Praed & Co., Ltd.) London, 1926. (Presented by the Publishers.)
- CASSANDRA, OR THE FUTURE OF THE BRITISH EMPIRE. By F. C. S. Schiller. 2s. 6d. 8vo. London, 1926.
- THE ORIGINS OF EMPIRE. By I. Colvin. 3s. 6d. 8vo. London, 1926.
- THE REGIMENTAL ANNUAL, THE SHERWOOD FORESTERS, NOTTINGHAMSHIRE AND DERBYSHIRE REGIMENT, 1925. Edited by Colonel H. C. Wylly, C.B. 8vo. London, 1926. (Presented by the Editor.)
- DIE KAMPFWAGEN FREMDER HEERE. 8vo. Berlin, 1926.
- ATLANTIS, AMERICA AND THE FUTURE. By Colonel J. F. C. Fuller. 2s. 6d. 8vo. London, 1926.
- THE FOUNDATIONS OF THE SCIENCE OF WAR. By Colonel J. F. C. Fuller. 21s. 8vo. London, 1926.
- TRANSPORTATION IN WAR. By Colonel A. S. Redman, C.B. 1s. 6d. 8vo. London, 1925.
- PEKING TO LHASA. By Sir F. Younghusband. 18s. 8vo. London, 1925.
- THE INTIMATE PAPERS OF COLONEL HOUSE. By C. Seymour. 2 vols. 42s. 8vo. London, 1926.

- CONFORMATION AND APPOINTMENTS OF THE HORSE. By Major R. S. Timmis, D.S.O., Royal Canadian Dragoons. 2s. 8vo. (Forster, Groom & Co., Ltd.) London, 1926. (Presented by the Publishers.)
- THE PRINT COLLECTORS' QUARTERLY FOR FEBRUARY, 1925, containing Article on Military Prints by Colonel C. de W. Crookshank, M.P., His Majesty's Bodyguard. (Presented by the Author.)
- THE STUDY OF WAR. An Inaugural Lecture delivered before the University of Oxford on 23rd February, 1926. By Major-General Sir E. Swinton, K.B.E., C.B., D.S.O., Chichele Professor of Military History in the University of Oxford. 2s. 8vo. (The Clarendon Press, Oxford.) (Presented by the Delegates of the Clarendon Press.)
- THE OFFICIAL HISTORY OF THE WAR—MESOPOTAMIA CAMPAIGN, 1914-1918. VOL. III. Compiled by Brig.-General F. J. Moberly, C.B., C.S.I., D.S.O. Maps and Illustrations. 15s. 8vo. (H.M. Stationery Office). 1925. (Presented by the Publishers.)
- HISTORY OF HIS MAJESTY'S NAVIGATION SCHOOL, 1729-1926. A Study of Naval Education. By Lieutenant R. K. Dickson, R.N. Folios N.P., N.D. (Presented by the Author.)
- HISTORICAL MEMOIRS OF THE ROYAL NAVAL CLUB OF 1765 AND THE NAVY CLUB OF 1785 TO THE TIME OF THEIR AMALGAMATION AS THE ROYAL NAVY CLUB OF 1765 AND 1785, UNITED 1889. Revised Edition, 1925. Compiled by Captain E. Altham, C.B., R.N. 8vo. (E. G. Berryman & Sons, Ltd.) London, 1925. (Presented by the Hon. Secretary on behalf of the Royal Navy Club.)
- LIFE AND LETTERS OF COMMANDER R. SEYMOUR, R.N. Written and Edited by his mother, Lady Seymour. 8vo. Printed for Private Circulation by R. Maclehose & Co. Glasgow, 1926. (Presented by Lady Seymour.)
- DER ENDKAMPF IN MAZEDONIEN, 1918. By Otto Landfried. 8vo. Berlin, 1923. (Presented by Captain C. F. Atkinson.)
- WINGED DEFENCE. By W. Mitchell. 10s. 6d. 8vo. New York, 1925.
- THE GERMAN AIR RAIDS ON GREAT BRITAIN, 1914-1918. By Captain J. Morris. 16s. 8vo. London, 1926.
- THE TRUTH ABOUT THE CHINESE REPUBLIC. By H. G. W. Woodhead. 15s. 8vo. London, 1926.
- ON SE BAT SUR MER. By Captain P. Chack. 8vo. Paris, 1926. (Presented by the Author.)
- HELD BY THE BOLSHIEVICS. By Major L. E. Vining. 8vo. London. N.D. (Presented by Admiral Sir Douglas Nicholson, K.C.M.G., K.C.V.O.)
- LA GUERRE D'INDEPENDANCE EN FINLANDE EN 1918. Par Général-Major H. Ignatius et Lecteur K. Soikkeli. Illustrations and Maps. 8vo. Helsingfors, 1925. (Presented by General H. Ignatius.)
- ADVENTURES IN TURKEY AND RUSSIA. By E. H. Keeling, M.C. 10s. 6d. 8vo. London, 1926.

A SHORT HISTORY OF THE BRITISH ARMY. By Captain E. W. Sheppard. 14s. 8vo. (Constable & Co.) London, 1926. (Presented by the Publisher.)

THE PICTORIAL LIFE OF WOLFE. By A. E. Wolfe-Aylward. Illustrations. 8vo. Plymouth, 1926.

A COLLECTION OF BOOKS AND MAPS DEALING WITH THE ITALIAN FRONT DURING THE LATE WAR. (Presented by Major-General Lord Treowen, C.B., C.M.G.)

The following books were presented by Major-General A. E. Sandbach, C.B., D.S.O. :—

THE OFFICERS' MANUAL IN THE FIELD. Translated from the German. 8vo. London '98.

RULES AND REGULATIONS FOR THE FORMATIONS, FIELD EXERCISES AND MOVEMENTS OF H.M. FORCES. 8vo. London, 1801.

EXTRACTS FROM COLONEL TEMPELHOFF'S HISTORY OF THE SEVEN YEARS' WAR. By Colonel The Hon. C. Lindsay. 8vo. London, 1793.

ESSAYS ON THE THEORY AND PRACTICE OF THE ART OF WAR. Chiefly translated from the best French and German writers, by the Editor of the "Military Mentor." 3 vols. 8vo. London, 1809.

MILITARY MEMOIRS RELATING TO CAMPAIGNS, BATTLES AND STRATAGEMS OF WAR. By J. Glenie, Esq. 8vo. London, 1805.

REGIMENTAL HISTORIES

THE HISTORY OF THE 40TH DIVISION. By Lieut.-Colonel F. E. Whitton, C.M.G. Maps. 8vo. (Gale & Polden, Ltd.) Aldershot, 1926. (Presented by Major-General Sir H. G. Ruggles-Brise, K.C.M.G., C.B., M.V.O., Chairman 40th Division History Committee.)

THE ROYAL BERKSHIRE REGIMENT (PRINCESS CHARLOTTE OF WALES'S). By F. Loraine Petre, O.B.E. 2 vols. Illustrations and Maps. 8vo. Reading, 1925. (Presented by the Regimental History Committee, The Royal Berkshire Regiment.)

THE HISTORY OF THE ROYAL SCOTS FUSILIERS (1678-1918). By John Buchan. 8vo. (T. Nelson & Sons, Ltd.) London, 1925. (Presented by the Rev. T. Scott.)

ESSEX UNITS IN THE WAR, 1914-1919. VOL. III. THE ESSEX YEOMANRY. By J. W. Burrows. Illustrations and Maps. 5s. 8vo. (John H. Burrows & Sons, Ltd.) Southend-on-Sea, 1926. (Presented by the Publishers.)

HISTORY OF THE KING'S OWN YORKSHIRE LIGHT INFANTRY. By Colonel H. C. Wylly, C.B. 2 vols. 8vo. (Percy Lund, Humphries & Co., Ltd.) London, 1926. (Presented by 1st Bn., The King's Own Yorkshire Light Infantry.)

MANUSCRIPTS

Manuscript books have been given by Captain A. S. G. Douglas, O.B.E., The Rifle Brigade, formerly the property of Admiral the Hon. G. H. Douglas, as under :—

- (1) A TEXT BOOK OF NAVAL GUNNERY. (*Circa* 1830.)
- (2) A NOTE BOOK CONTAINING THE WATCH, QUARTER AND STATION BILLS OF H.M.S. "HIBERNIA." (*Circa* 1848.)
- (3) A NOTE BOOK CONTAINING STANDING ORDERS AND ACTION STATIONS OF H.M.S. "HIBERNIA" AND PARTICULARS OF H.M.S. "QUEEN." (1846-49.)
- (4) WATCH BILL AND SAIL ORDERS, H.M.S. "QUEEN." (1850.)
- (5) CAPTAIN'S STANDING ORDERS, H.M.S. "CARYSFORT."
- (6) CAPTAIN'S ORDERS, H.M.S. "CRUISER." (13/12/1853.)
- (7) WATCH BILL AND DAILY ROUTINE, H.M.S. "CRUISER." (1854-55.)
- (8) NOTEBOOK OF DIMENSIONS, ARMAMENT AND PARTICULARS OF H.M.S. "CRUISER." (1854.)
- (9) NOTEBOOK CONTAINING QUESTIONS AND ANSWERS IN RIGGING; ALSO DETAILS AND HISTORIES OF H.M.S. "MAGICIENNE," H.M.S. "THALIER," AND H.M.S. "CARYSFORT."
- (10) MANUSCRIPT RECORD (NARRATIVE) OF CRUISE OF H.M.S. "WANDERER." (1839-44.) Author Unknown.

Report of Proceedings

at the

Ninety-fifth Anniversary Meeting

Held on Tuesday, 2nd March, 1926, at 3.30 p.m.

Vice-Admiral SIR HENRY H. BRUCE, K.C.B., M.V.O. (*Vice-Chairman of the Council*), presiding.

THE CHAIRMAN: My Lords and Gentlemen, before the meeting opens may I, with your permission, apologise for Lord Horne, the Chairman of the Council, who is unavoidably absent from the Meeting to-day. In his absence I have been delegated to take his place. The Secretary will now read the Notice convening the Meeting.

THE SECRETARY (Lieut.-Colonel Sir Arthur Leetham, K.C.V.O., C.M.G., F.S.A.) read the Notice convening the Meeting.

ANNUAL REPORT FOR 1925.

VICE-PRESIDENTS.

The Council regret to report the death of Field Marshal Lord Grenfell, G.C.B., G.C.M.G. Field Marshal Sir William Robertson, Bart., G.C.B., G.C.M.G., K.C.V.O., D.S.O., was elected a Vice-President by the Council in his place.

COUNCIL.

The Council regret also to have to report the death of Admiral-of-the-Fleet Sir F. C. D. Sturdee, Bart., G.C.B., K.C.M.G., C.V.O., who had been a very active Member of the Council, and had twice gained the Gold Medal of the Institution. Vice-Admiral Sir George P. W. Hope, K.C.B., K.C.M.G., was duly elected a Member of the Council in his place.

LIBRARY.

The number of books added to the Library during the past year was 333, which included gifts by Field Marshal the Viscount Allenby, G.C.B., G.C.M.G., Captain Sir H. N. Jackson, Bart., His Grace the Duke of Buccleuch, Colonel W. G. Simpson, C.M.G., D.S.O., The Indian Staff College, Quetta, and Major-General Sir Charles Callwell, K.C.B.

Mrs. Daniell has presented to the Institution a large and valuable collection of Naval and Military Bookplates, these are being bound and will be available for inspection by Members in the near future.

The number of officers to use the Library for professional purposes has again increased.

The number of books in the Library is now 26,405, and maps, 7,415.

The number of subscribers to the Lending Library during the past year was 402, compared with 351 in the previous year.

The number of works issued on loan to Members was 5,096 as against 4,569 in 1924.

THE JOURNAL.

The JOURNAL has been slightly enlarged, some new features have been introduced, and the illustrations, diagrams, etc., have been increased. It has been published regularly each quarter, and the circulation has been well maintained. The outside sales during the year under review have amounted to £475 10s. 5d., as compared with £472 17s. 10d. the previous year.

There continues to be no shortage of contributions on military matters, but the Navy and Air Force do not yet support it to the same extent as the Army. This is not due to any lack of official approval, for the Naval and Air Staffs and Naval and War Colleges are most sympathetic and helpful.

The Editor is also indebted to the General Staff of the War Office and to the Historical Section of the Committee of Imperial Defence for much useful assistance.

A statement of the future policy of the JOURNAL, which it is hoped will widen the source of contributions, has been approved by the Council as the result of experience during 1925 under the new Editorship. This appears in the February, 1926, number.

The thanks of the Institution are due to the following writers and lecturers for papers contributed and lectures delivered by them :—W. E. Arnold-Forster ; Brevet Lieutenant-Colonel R. H. Beadon, C.B.E., R.A.S.C., p.s.c. ; Colonel D. J. C. K. Bernard, C.M.G., D.S.O. ; Major G. C. G. Blunt, D.S.O., O.B.E., A.M.I.Mech.E., R.A.S.C. ; Major F. G. Cardew, O.B.E. ; L. G. Carr-Laughton ; Major L. I. Cowper, O.B.E. ; Lieutenant-Colonel H. G. de Watteville, C.B.E., R.A. (R. of O.) ; Luke Gerald Dillon ; Captain T. J. Edwards ; Lieutenant H. J. Evans, R.N. ; C. Ernest Fayle ; Major K. B. Ferguson, R.G.A. ; Lieutenant R. D. Foster, R.A. ; Colonel J. F. C. Fuller, D.S.O. ; Lieutenant-Commander W. S. Galpin, F.R.G.S., R.N. ; Commander L. G. Garbett, R.N. ; Major M. F. Grove-White, D.S.O., O.B.E., R.E. ; Captain G. L. Harrison, D.S.O. ; Captain B. H. Liddell Hart ; Captain J. F. Hart, D.S.C. ; Colonel E. C. Heath, D.S.O. ; Vice-Admiral R. A. Hopwood, C.B. ;

Commander C. H. N. James, R.N. ; Major G. L. Kaye, M.C., R.F.A. ; Major-General W. M. St. G. Kirke, C.B., C.M.G., D.S.O., p.s.c. ; Captain C. N. Littleboy, M.C. (T.A.) ; Major-General Sir George MacMunn, K.C.B., K.C.S.I., D.S.O. ; Major E. R. Macpherson, O.B.E., F.R.G.S., R.A.O.C. ; Brigadier-General F. G. Marsh, C.M.G., D.S.O. ; Colonel G. M. Orr, C.B.E., D.S.O. ; Captain A. L. Pemberton, M.C., R.A. ; Lieutenant-Colonel Rimailho ; "Rousseau" ; Air Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O. ; "Shanghai Trader" ; Major G. J. V. Shepherd, D.S.O. ; Major Oliver Stewart ; Captain Frederic E. Storey, R.D., R.N.R. ; Major-General H. F. Thuillier, C.B., C.M.G. ; Major C. T. Tomes, D.S.O., M.C. ; Brigadier-General C. N. Watts ; Vice-Admiral Sir Richard Webb, K.C.M.G., C.B.

MUSEUM.

During 1925 there have been added sixty new exhibits, all of which have been duly catalogued, recorded in the JOURNAL, and placed on exhibition in the building. The Council desire to express their thanks to the various donors for these additions, which include a collection of valuable mementos of the late Field Marshal Lord Hill, G.C.B., presented by Caroline, The Viscountess Hill ; a bust of the late Field Marshal Sir George White, V.C., G.C.M.G., G.C.V.O., G.C.S.I., O.M., presented by the sculptor, Mr. John Tweed ; two pairs of Regimental Colours of the 1st and 2nd Battalions of the 11th Portuguese Infantry Regiment, which were carried by them throughout the Peninsular War, given by Mrs. Grant, of Kerrow ; Arabi Pasha's tent Colour, taken at Tel-el-Kebir, given by Lady Rogers ; an interesting description on silk of the Ensigns and Colours taken from the French and Bavarians at the Battle of Blenheim, and executed in Indian Ink, given by Lady Hulse ; a Wedgwood china cup which belonged to Napoleon I, brought from Longwood ; a pair of the Royal Fusiliers Regimental Colours (1785 to 1796), given by the Colonel and Officers of the 1st Battalion ; a large scale model of the British Grand Fleet which fought at the Battle of Jutland.

The collection of Mint Medals was completed up to date by a large number of additions both of medals and clasps.

The total number of persons to pass through the turnstiles amounted to 28,472, against 30,854 in 1924, but this does not include the very considerable number of visitors introduced by Members personally. A large number of Soldiers, Sailors, Airmen and Boy Scouts were also granted free admission. The total amount taken at the turnstile was £1,064 17s. 9d., against £1,127 9s. 3d. in 1924, being a small decrease. The sales of the Museum Catalogue amounted to £108 3s. 1d., against £98 last year, which must be considered as satisfactory.

Forty-eight schools were granted free admission to the Museum during the year, and attendants were specially detailed to conduct these parties and explain the various exhibits.

The amount standing to the credit of the Museum Purchase Fund is £28 19s. 2d., and the Museum Committee hope that this fund will continue to receive support from Members, especially those interested in the Museum.

ARTHUR LEETHAM, Lieut.-Colonel,

*Secretary and
Chief Executive Officer.*

January 25th, 1926.

	£	s.	d.	£	s.	d.
To Excess of Assets over Liabilities as at 31st December, 1924	95	581	3 5	..	..	..
" Additions to Museum Contents catalogued during the year	446	13	6	..	..	..
	30,027	16	11	..	..	..
Less Depreciation of Investments						
To Market Price as at 31st December, 1925	540	6	7	..	..	..
Loss on Realisation of Investments	2	5	8	..	..	..
	542	12	3	..	..	..
Less Revenue Account—	95	485	4 8	..	..	..
Deficit for the year	2,104	16	7	..	..	..
" Sundry Creditors	93	380	8 1	..	..	..
" Museum Purchase Fund	1,326	3	1	..	..	..
" Redemption Fund	2,879	19	2	..	..	..
" Overdraft at Bank	414	5	6	..	..	..
" Less Cash in hand	12	11	0	..	..	..
	401	14	6	..	..	..
By Leasehold Building—Whitehall, S.W.1	..	..	..	..	..	..
" Furniture, Museum Cases, etc.—	..	..	..	..	..	..
" As at 31st December, 1924	..	..	..	..	..	..
" Library Books, Pictures, Maps, etc.—as valued for Insurance as at 31st December, 1924	..	..	..	..	..	..
" Museum Contents, as valued for Insurance (excluding Loan Collection £29,287 10s.)	..	..	..	..	..	..
" As at 31st December, 1924	..	..	..	..	..	..
" Additions catalogued during the year	..	..	..	..	..	..
	46,320	11	0	..	..	..
	446	13	6	..	..	..
" Investments (at Market Price, 31st December, 1925)	..	..	..	..	..	..
£2,421 18s. 8d. India 3½% Stock	1,610	11	9	..	..	..
£1,000 5% War Loan, 1929-47	1,005	0	0	..	..	..
£9,693 19s. 4½% Funding Loan, 1900-40	5,723	6	7	..	..	..
£7,502 3s. 3½% Conversion Loan	5,615	7	4	..	..	..
" Leasehold Redemption Fund—Investment (at Market Price 31st December, 1925)	1,495	3	0	..	..	..
£1,968 18s. 8d. Ceylon 3½% Stock	1,384	7	4	..	..	..
£2,232 17s. London County Council 3½% Stock	..	..	..	..	..	..
" Sundry Debtors and Amounts paid in Advance	..	..	..	..	..	..
	2,879	10	4	..	..	..
	472	10	0	..	..	..
	£98,016	15	2	..	..	..

We have examined the above Balance Sheet with the Books and Vouchers and certify the same to be correct. All our requirements as Auditors have been complied with. We have verified the Cash Balance and Investments. We have also verified the Leasehold Redemption Fund being sufficient to provide for the depreciation of the Lease, we are of opinion that the Balance Sheet is properly drawn up and correctly shows the position of the Royal United Service Institution on 31st December, 1925.

614, Fore Street, London, E.C.2, 23rd January, 1926.

BRACKENBURY MEMORIAL FUND.

31ST DECEMBER, 1925.

DR.

CR.

	£	s.	d.		£	s.	d.
1925.				Jan. 7 By Hugh Rees, Ltd.—Books			21 18 0
Jan. 2 " Dividend on £421 14. 5% War Loan, 1920-47, inscribed	55	0	1	Feb. 4 " Hugh Rees, Ltd.—Books			2 9 0
Dec. 1 " Dividend on £421 14. 5% War Loan, 1920-47, inscribed	10	10	6	Mar. 5 " Hugh Rees, Ltd.—Books			33 1 12
Dec. 31 " Balance due to Bank	10	10	6	April 2 " Harrison & Sons, Ltd.—Map 'Mourning and Book Binding			19 3 10
				July 8 " Hugh Rees, Ltd.—Books			3 0 0
				" 9 " Administration Fee—Royal United Service Institution			5 3 6
							1 5 3
	250	0	9				
							256 0 9

We hereby certify the above Account to be correct.

614, Fove Street, London, E.C.2.
23rd January, 1926.

WILDE, FERGUSON-DAVIE, AND MILLER, Chartered Accountants, Auditors.

CHESNEY MEMORIAL MEDAL FUND.

DR.	CR.
31st DECEMBER, 1925.	31st DECEMBER, 1925.
1925.	1925.
Jan. 1 To Balance—brought forward	£ s. d.
May 29 " Dividend on £230 Bengal & North Western Railway	70 10 11
Sept. 9 " 31% Preference Stock	3 11 1
Dec. 7 " Refund of Income Tax on Dividends, 1924-25	0 19 6
Dec. 7 " Dividend on £230 Bengal & North Western Railway	3 11 9
31% Preference Stock	
	<u>£78 13 3</u>
	£78 13 3

We hereby certify the above Account to be correct.
WILDE, FERGUSON-DAVIE, AND MILLER, Chartered Accountants,
Auditors.

61½, Fore Street, London, E.C.2.
23rd January, 1926.

TRENCH GASCOIGNE PRIZE FUND.

DR.	CR.
31st DECEMBER, 1925.	31st DECEMBER, 1925.
1925.	1925.
Jan. 1 To Balance—brought forward	£ s. d.
June 2 " Dividend on £1,862 London & North Eastern Railway	37 6 9
July 1 " 3% Debenture Stock	21 12 11
Sept. 9 " Dividend on £100 5% War Loan, 1929-47, Inscribed	2 10 0
Dec. 1 " Dividend on £1,862 London & North Eastern Railway	21 19 11
3% Debenture Stock	12 11 4
Refund of Income Tax on Dividends, 1924-25	
Dividend on £100 5% War Loan, 1929-47, Inscribed	2 10 0
Stock	
	<u>£98 10 11</u>
	£98 10 11

We hereby certify the above Account to be correct.
WILDE, FERGUSON-DAVIE, AND MILLER, Chartered Accountants,
Auditors.

61½, Fore Street, London, E.C.2.
23rd January, 1926.

DR. REVENUE ACCOUNT FOR THE YEAR ENDING 31ST DECEMBER, 1925. CR.

1924	£	s.	d.	1924	£	s.	d.
To Salaries ..	1,752	10	0	By Members' Subscriptions ..	4,091	14	0
Wages and National Insurance ..	2,021	17	9	Extra Subscriptions ..	..	46	14
Attendants' Clothing ..	163	18	0	Life Subscriptions ..	..	323	15
Pensions and Gratuities ..	..	26	0	Entrance Fees ..	..	322	7
Museum Sundries ..	3,974	5	9	Admissions to Museum ..	1,127	9	3
Museum Catalogues, Printing, etc. ..	295	8	10	Sale of Museum Catalogues and Pamphlets ..	98	11	9
JOURNAL Printing ..	1,908	7	7	Sale of JOURNAL ..	472	17	10
JOURNAL Postage ..	339	19	9	Advertisements in JOURNAL ..	231	9	7
Literary Services ..	234	15	6	Leading Library ..	167	8	9
Library, Purchases and Binding of Books ..	168	2	6	Repairing of Regimental Colours ..	19	7	4
Periodicals and Newspapers ..	69	6	5	Miscellaneous Receipts ..	7	10	6
Advertising ..	..	87	5	..	..	20	6
Shortland Notes ..	..	87	5	..	..	7	2
Lecture Expenses ..	..	15	5	..	..	..	..
Ground Rent ..	580	0	0	Rent of Lecture Theatre, etc. ..	908	18	0
Water Rate ..	95	11	6	Dividends and Interest ..	600	0	1
Bates ..	860	8	4	Refund of Income Tax thereon ..	129	4	10
Insurance ..	85	15	5	..	..	129	4
Fuel ..	160	11	8	Refund of Income Tax—Schedule A ..	643	10	0
Lighting ..	130	19	8	Government Grant ..	750	0	0
Repairs (including renewal of Heating Apparatus) ..	324	13	4	Balance, being Deficit for the year ..	853	3	10
House Expenses and Sundries ..	261	15	0	..	..	..	..
Audit and Accountancy ..	26	5	0	..	..	..	..
Legal Expenses ..	14	12	8	..	..	..	..
Postages, Telegrams, etc. ..	78	10	9	..	..	..	..
Printing and Stationery ..	205	11	3	..	..	..	..
Telephone ..	17	12	3	..	..	..	..
Gold Medal ..	13	13	0	..	..	..	..
Interest on Bank Overdraft ..	5	9	7	..	..	..	..
	£10,304	0	7		£10,304	6	7
					£10,740	10	1

£10,740 10 1

THE CHAIRMAN : Gentlemen, I presume it is your desire that the Report and Accounts, as circulated, be taken as read ? (Agreed to.)

THE CHAIRMAN : Gentlemen, I now beg to move : " That the Report and Accounts, as circulated, be taken as read and adopted." In proposing that resolution I may say that the Meeting to-day is a little out of the common because, for certain reasons which I will refer to when the time comes, we are going to ask you to pass a resolution increasing the subscription. I will now call upon the Chairmen of the various Committees to address the Meeting, first of all the Chairman of the Finance Committee, who will second the resolution.

FINANCE.

COLONEL C. W. TROTTER, C.B., T.D. (Chairman of the Finance Committee) : My Lords and Gentlemen, you have all seen the Balance Sheet and Accounts, and I do not think they require very much explanation. The capital account I am not anxious about so long as we do not have to sell securities to pay for the deficit in our working expenses and our income. The income account shows a debit of £2,104. That, I do not think, quite shows the exact position, as we spent about £900 in installing an up-to-date heating plant in the building which will last for a great number of years and a considerable portion of which at any rate ought, I think, to be charged to capital account. We are about £1,200 short for income, and the Chairman will, at a later stage, explain the proposals which the Council suggest should be adopted to remedy that state of affairs.

Owing to Sir Arthur Leatham's efforts our local rates will be considerably reduced, the rating being £1,246 per annum instead of £1,750. We should budget for an extra £1,000 a year ; this, I think, with certain other economies that will be made, will place us in a perfectly sound condition as regards income and expenditure. You will see there is a depreciation of securities amounting to about £540, which is not at all important, provided you do not have to sell the securities at a loss ; they are all high-class securities, and it is a mere question of the value of money whether they are a few pounds up or a few pounds down when the yearly valuation is taken. I have much pleasure in seconding the resolution.

JOURNAL AND LIBRARY.

ADMIRAL SIR R. G. O. TUPPER, G.B.E., K.C.B., C.V.O. (Chairman of the Journal and Library Committee) : My Lords and Gentlemen, I have great pleasure in telling you that the number of members using the Lending Library increased last year by at least fifty, and that 1,000 more volumes were lent than in any previous year. That is a record for the Library. Later on you will hear from the Chairman that we hope to make the Library still more popular by including the subscription to the Library in the subscription to the Institution. As regards the JOURNAL, I think we have to congratulate the Editor and the Assistant Editor on its improvement. (Hear, hear.) I hope you will all agree that it has been improved. (Hear, hear.) The sales of the JOURNAL have also slightly increased. There continues to be no shortage of contributions on military matters, but officers of the Navy and the Air Force seem to be a little shy of sending articles and opinions to the JOURNAL.

This is not due to any lack of official approval, for the staffs of the Naval and War Colleges are most sympathetic and helpful in that regard. The Lords Commissioners of the Admiralty anyhow have issued a Fleet Order drawing the attention of Officers to the JOURNAL, encouraging them to contribute, and informing them that they will not get bad marks or be jumped on for the opinions that they express in the JOURNAL! I should just like to read you the policy of the JOURNAL, as recently approved by the Council, and published in the February number of the JOURNAL:—

“ With the publication of the first number of the 1926 Volume, which coincides with a new printing contract, the Editor is authorised by the Council to make known their future policy with regard to the JOURNAL of the Institution.

“ In the course of the past year special effort has been directed towards modernising its contents with a view to making the JOURNAL of further value to the serving officer.”

With regard to this point it is recognised that so far as the bulk of our members is concerned the JOURNAL is practically all they get for their subscriptions while they are on foreign service. Some are such a long way from England that they are unable to attend the Lectures here and to make use of the building, and therefore it is necessary for us to give them the best possible value for their money in the JOURNAL. The statement continues:—

“ It is desired that all officers shall come to regard this publication as a useful and officially recognised means of making known their opinions on professional matters, with a view to developing the higher study of war, the better understanding of Imperial Defence and a closer relationship between the doctrines, tenets and activities of the three Services.

“ The JOURNAL enjoys the unique privilege of receiving the active support and assistance of the Naval Staff, the General Staff of the Army and the Air Staff, while a close liason is also maintained through representative members of the Council with the Historical Section of the Committee of Imperial Defence, the Naval War College and the three Staff Colleges.

“ The Council particularly desire to encourage contributions from the younger generation of serving officers. If official approval has not already been obtained by such writers, the Editor will ensure that this is done before their articles are published. To those who have not had much experience in putting their views on paper the Editorial Staff will gladly offer their best assistance and advice. Articles may be published anonymously if authors so wish.

“ Special features recently introduced into the JOURNAL and which it is intended to continue to develop in future are: (a) Articles dealing with those aspects of the commercial and economic life of our nation which vitally affect our powers of defence and the well-being of the Services; (b) Scientific developments in relation to weapons; (c) The military situation abroad especially in disturbed parts of the world; (d) Correspondence. Members are specially invited to send contributions of the above nature, for which remuneration will be made unless they are offered free.

"There is no intention of dropping the time-honoured connection of the JOURNAL with the historical associations of the Services, but preference will be given to articles dealing with past events which not only add to the store of historical knowledge, but which also bring out the lessons which should be deduced therefrom."

That is all I have to say, Sir.

MUSEUM.

COLONEL C. H. COLVIN, C.B., D.S.O. (Chairman of the Museum Committee): Mr. Chairman, my Lords and Gentlemen. During the last year some sixty new exhibits have been added to the Museum, and the Council desire to express their thanks to the donors of these valuable additions, which include :—

- (1) Mementos of the late Field Marshal Lord Hill, C.B., presented by Caroline Viscountess Hill.
- (2) A bust of Field Marshal Sir George White, V.C., presented by the sculptor, Mr. John Tweed.
- (3) Two pair of Regimental Colours of the 1st and 2nd Portuguese Battalions of the 11th Portuguese Regiment, carried by them throughout the Peninsular War, given by Mrs. Grant, of Kerrow.
- (4) Arabi Pasha's Tent Colour, presented by Lady Rogers.
- (5) An interesting description on Silk of the Ensigns and Colours taken from the French and Bavarians at the Battle of Blenheim.
- (6) A pair of Royal Fusilier Regimental Colours, 1785-1796, presented by the Colonel and Officers of the 1st Battalion.
- (7) A large case containing Models of all the Ships of the British Grand Fleet which fought at the Battle of Jutland, purchased by the Council.

The collection of Mint Medals was completed up to date by a large number of additions both of medals and clasps. The total number of persons to pass through the turnstiles amounted to 28,472 against 30,854 in 1924, but this does not include the very considerable number of visitors introduced by members personally. A large number of Soldiers, Sailors, Airmen and Boy Scouts were also granted free admission. The total amount taken at the turnstile was £1,064 17s. 9d. against £1,127 9s. 3d. in 1924, being a small decrease. The sales of the Museum Catalogue amounted to £108 3s. 4d. against £98 last year, which must be considered as satisfactory. Forty-eight schools were granted free admission to the Museum during the year, and attendants were specially detailed to conduct these parties and explain the various exhibits. The amount standing to the credit of the Museum Purchase Fund is £28 19s. 2d., and the Museum Committee hope that this fund will continue to receive support from members, especially those interested in the Museum.

THE CHAIRMAN: Has anybody any remarks to make? If not, I will put the resolution.

The resolution was then put and carried unanimously.

THE AUDITORS.

MAJOR A. C. CHAMIER : I have much pleasure in proposing : " That the thanks of the meeting be accorded to the Auditors, Messrs. Wilde, Ferguson-Davie, and Miller, for their services, and that they be re-elected Auditors for the ensuing year at a fee of forty guineas."

This resolution has for its object to record the satisfaction of the Institution with the way in which the accounts are put before the members every year, and to invite the same Auditors to continue their labours for another year. I have much pleasure in moving the resolution.

COLONEL H. WYLLY, C.B. : I have much pleasure in seconding the resolution.

The resolution was then put, and carried unanimously.

ALTERATION OF BYE-LAWS.

THE CHAIRMAN : The third resolution relates to the alteration of Bye-Laws. There are three Bye-Laws to be altered, and I propose, with your permission, to put them separately in order that a clear decision may be obtained. You must not run away with the idea that, because we want to increase the subscription, we are in a bad way. As a matter of fact we are not. But it must be as patent to you, gentlemen, as it is to the Council, that we must have a revenue equal to our expenditure, and in view of the expense of printing at the present time and other items of that kind it is necessary to increase the subscription to meet those additional charges. I am sure it is very clear to you that that must be done, and I hope you will find no difficulty in passing the resolutions when they are put to you. I now formally move :

" That the following alterations be made to the Bye-Laws :

- (I) Chapter III, para. 4, to read : ' All Annual Members to pay a subscription of £1 5s. from 1st January, 1927, to include the 10s. subscription to the Lending Library.'
- (II) Chapter III, para. 5, to read : ' Members joining after 30th June, 1926, to pay as follows :
 - (1) Annual Subscription, £1 5s. Entrance Fee, £2 2s.
 - (2) Life Membership, £20.Both to include the 10s. subscription to the Lending Library.'
- (III) Chapter III, para. 9, delete : ' Members of the United Service Institution of India for six months on payment of 5s.' "

COLONEL C. W. TROTTER, C.B., T.D. (Chairman of the Finance Committee) : I have very much pleasure in seconding the resolution. In doing so I do not think I need say anything more than I have done in my previous remarks, except that it is essential that our income and our expenditure should balance. The production of the JOURNAL is our chief item of expenditure, but as you know it is an essentially important part of the work of the Institution. It is very carefully looked after by Admiral Tupper and his

Committee and no unnecessary expenditure is incurred. I heartily recommend you to pass this resolution with the idea of making both ends meet and balancing the yearly budget.

THE CHAIRMAN: As I stated previously, I propose to put the three alterations that it is suggested should be made to the Bye-Laws separately. In order that you may thoroughly appreciate the alterations that are being made, I will ask the Secretary to read the Bye-Law and then the alteration which it is suggested should be made in it.

THE SECRETARY: Chapter III, paragraph 4, now reads: "Members who joined previous to the 3rd March, 1900, pay in accordance with the regulations in force at the time of joining." The alteration which has been moved is that Chap. III, paragraph 4, shall read: "All Annual Members to pay a subscription of £1 5s. from 1st January, 1927, to include the 10s. subscription to the Lending Library." We are, therefore, asking that the subscription shall be increased by 4s. and we give in, to all the members, the Library subscription, which is 10s. a year.

THE CHAIRMAN: Does anybody desire to make any remarks?

COLONEL YATE: May I ask, does this refer to old members?

THE CHAIRMAN: To everybody.

COLONEL YATE: Does it apply to Life Members?

THE SECRETARY: We are dealing with the Life Members presently; but there is no proposal to increase the subscription of the present Life Members.

THE CHAIRMAN: I will now put the resolution, that that alteration be made to the Bye-Laws.

The resolution was then put, and carried unanimously.

THE CHAIRMAN: I now call upon the Secretary to read the second alteration to be made to the Bye-Laws.

THE SECRETARY: Chap. III, paragraph 5, reads as follows: "Members joining after the 3rd March, 1900, pay as follows:

- (1) Annual Member, £1 1s. Entrance Fee, £1 1s.
- (2) Life Member, £15."

The new Bye-Law will read:

"Members joining after 30th June, 1926, to pay as follows:

- (1) Annual Subscription, £1 5s. Entrance Fee, £2 2s.
- (2) Life Membership, £20.

Both to include the 10s. subscription to the Lending Library."

THE CHAIRMAN: Are there any remarks on that, please? If not, I put the resolution that the second alteration to the Bye-Laws be made.

The resolution was then put, and carried unanimously.

THE CHAIRMAN: I now call upon the Secretary to read the third alteration.

THE SECRETARY : Chapter III, paragraph 9, reads as follows : " Officers of the Indian and Colonial Naval and Military Forces, temporarily in the United Kingdom, may become Members for a period of six months, on payment of half-a-guinea, or one guinea for a period of twelve months. Members of the United Service Institution of India for six months on payment of 5s."

All that we propose to do is to alter the Bye-Law by deleting the latter part of it, namely, " Members of the United Service Institution of India for six months on payment of 5s." The reason for that is that, with the increased subscription, it would not be fair to the members that a temporary member coming from the India Institution should be able to enjoy the privileges of Membership for six months for a payment of 5s., and then pay a further 5s. for another six months, making it 10s. only for twelve months.

THE CHAIRMAN : Are there any remarks on that third alteration ? If not, I put the resolution that the alteration be made.

The resolution was then put, and carried unanimously.

VACANCIES ON THE COUNCIL.

THE CHAIRMAN : I am glad to say that no ballot will be required to-day for the election of members of the Council as the number of officers nominated is the exact number of the vacancies. The under-mentioned officers have been nominated as candidates for the vacancies on the Council :

REGULAR ARMY (3 *Vacancies*).

Field-Marshal The Viscount Allenby, G.C.B., G.C.M.G.

General Sir Aylmer Haldane, G.C.M.G., K.C.B., D.S.O.

Major-General H. F. Thuillier, C.B., C.M.G.

MILITIA (1 *Vacancy*).

Colonel C. H. Colvin, C.B., D.S.O.

TERRITORIAL ARMY (1 *Vacancy*).

Colonel A. S. Bates, D.S.O., T.D.

ROYAL NAVAL VOLUNTEER RESERVE (1 *Vacancy*).

Captain Lord Tredegar, C.B.E., F.S.A., R.N.V.R., A.D.C. to
H.M. The King.

I ask you duly to elect these officers as members of the Council.

The resolution was then put, and carried unanimously.

THE GOLD MEDAL ESSAYS, 1925.

THE CHAIRMAN: I will now ask the Secretary to read the report in regard to the Gold Medal Essays, 1925.

THE SECRETARY: In the first place I must tell you that twenty-seven Essays in all were submitted. I will now read the Report of the Referees:—

Royal Naval College,
Greenwich, S.E.

DEAR SIR ARTHUR LEETHAM,

23rd January, 1926.

Having in accordance with the request of the Council of the R.U.S.I. acted as Referees for adjudicating on the Gold Medal Essays for 1925, we have to inform you that our task is completed, and that we place the Essays in the following order:

- (1) No. 9. Motto: "Ships, More Ships."
- (2) No. 27. Motto: "For the Wise Pedlar a Stout Staff!"

Deserving of special mention:

No. 10. Motto: "Sail on, nor fear to Breast the Sea," etc.

No. 2. Motto: "Semper Vigilans."

In our opinion, the Essay which we consider the best, viz., No. 9, "Ships, More Ships," is worthy of the Institution's Gold Medal.

We consider that on the whole the Essays show that a great deal of care, attention and hard work has been expended in their compilation, and that the subject is one which has evidently evoked considerable interest.

At the same time we should like to point out that the tendency appears to be somewhat in the direction of dwelling too much on past experiences without fully using the lessons thus gained to anticipate the circumstances which may arise in future.

There is consequently a certain lack of definitely constructive proposals and not much originality of thought and ideas. Historical lessons have sometimes been used either in the form of "padding," and thus leading nowhere, or else there has been an inclination to state them without showing the bearing they might have on the present problem.

(Signed) G. T. C. P. SWABEY, *Captain, R.N.*
DAVID NORRIS, *Rear Admiral.*
RICHARD WEBB, *Vice Admiral.*

The subject of the Essay was as follows: "The Communications across the Oceans of the World being essential to the Empire; how best can they be Safeguarded?" Perhaps it will be of interest to the members to know that this subject was suggested by the late Admiral-of-the-Fleet Sir Doveton Sturdee.

(The Secretary then opened the sealed envelopes containing the names of the winners.)

The winner of the First Prize and the Gold Medal of the Institution for the Essay bearing the motto "Ships, More Ships," is Lieut.-Colonel J. C. Dundas, D.S.O., Royal Tank Corps.

This is not the first time that the Naval Essay has been won by a soldier.

The winner of the Second Prize, bearing the motto "For the Wise Pedlar a Stout Staff," is Commander R. D. Binney, R.N.

The Special Mentions are :

For the Essay bearing the motto, "Sail on, nor fear to breast the sea !
Our hearts, our hopes, are all with thee," is Major D. McA. Hogg,
Royal Engineers.

For the Essay bearing the motto "Semper Vigilans," Lieut.-Comdr.
A. H. Maxwell-Hyslop, R.N.

LIEUT.-GENERAL H. D. FARQUHARSON, C.M.G. : Mr. Chairman, my Lords and Gentlemen. I am sure we all realise what an immense amount of work is entailed, not only in reading and in studying but in adjudicating on this large number of Essays, and we are extremely grateful to those officers who have undertaken the task. I have much pleasure in moving : "That the thanks of the Institution be accorded to Vice-Admiral Sir Richard Webb, K.C.M.G., C.B. ; Rear-Admiral D. T. Norris, C.B., C.M.G. ; and Captain G. T. C. P. Swabey, D.S.O., R.N., for adjudicating on the Prize Essays."

REAR-ADMIRAL A. G. HOTHAM, C.B., C.M.G. : I have much pleasure in seconding that resolution.

The resolution was then put, and carried unanimously.

THE CHAIRMAN : I will ask the Secretary to read extracts from a letter which has been received from Admiral Webb.

THE SECRETARY : Admiral Webb had intended to be present this afternoon to say a few words about the Essays and to express his thanks to you for passing this resolution. He has just taken over the Royal Naval War College and is very busy, and as a result he is not able to attend to-day. He has sent me a letter in which he says :

"I have only just taken over my appointment to-day, and the new Session of the War College begins in ten days' time ; there is, therefore, a great deal to be prepared in a very short time, I trust therefore that my presence will be excused.

"I should like to say what a pleasure it was to act as one of the Referees, and to thank the Council for entrusting my colleagues and myself with the task."

THE CHAIRMAN : I have been asked to enquire whether Lieut.-Colonel J. C. Dundas, D.S.O., the winner of the Gold Medal, is present here this afternoon.

I am sorry to see that apparently he is not.

RETIRING MEMBERS OF THE COUNCIL.

GENERAL SIR EDMUND BARROW, G.C.B., G.C.S.I.: My Lords and Gentlemen. My task is a very simple one. It is to move: "That the thanks of the Institution be accorded to the following retiring members of the Council:

Colonel A. S. Bates, D.S.O., T.D.

Colonel C. H. Colvin, C.B., D.S.O.

General Sir J. A. L. Haldane, G.C.M.G., K.C.B., D.S.O.

General Sir Ivor Maxse, K.C.B., C.V.O., D.S.O.

Major-General H. F. Thuillier, C.B., C.M.G.

Captain Lord Tredegar, C.B.E., F.S.A., R.N.V.R., A.D.C. to The King."

ADMIRAL SIR REGINALD TUPPER, G.B.E., K.C.B., C.V.O.: I have much pleasure in seconding that resolution.

The resolution was then put and carried unanimously.

THE CHAIRMAN.

COLONEL LORD AMPHILL, G.C.S.I., G.C.I.E.: My Lords and Gentlemen. We cannot disperse without rendering the usual compliment and civility of a vote of thanks to the Chairman. On this occasion it is something more than a prefatory compliment. I am sure we all appreciate the manner in which Admiral Sir Henry Bruce has performed his duties, and I cannot doubt that some of you have been sharing my wish that a larger and more turbulent meeting had been present in order to put to the test his undoubted qualities of firmness and decision. I, therefore, have the greatest pleasure in moving: "That the thanks of the Institution be accorded to the Chairman for presiding at this meeting."

CAPTAIN SIR D. WILSON-BARKER, Knt., R.N.R.: I have much pleasure in seconding the resolution so ably proposed by Lord Amphill.

The resolution was put to the meeting by Lord Amphill, and carried with acclamation.

THE CHAIRMAN: Lord Amphill, Captain Wilson-Barker and Gentlemen. I thank you very much, one and all, for what you have said. I am only too happy at any time to take the place of Lord Horne and do anything I can for the welfare of the Institution. I should like before the meeting closes to say how much the Council and the Members are indebted to Sir Arthur Leatham and the whole of his staff for the manner in which the Institution is conducted; each and all are out to do their best in every possible way and it is a pleasure for me to record this.

The meeting then terminated.

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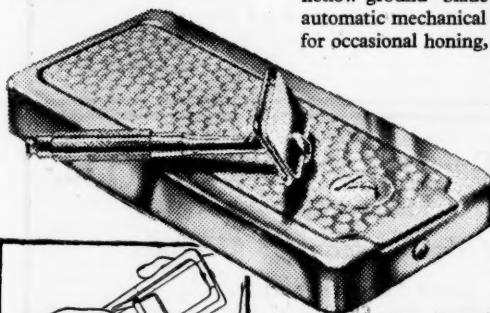
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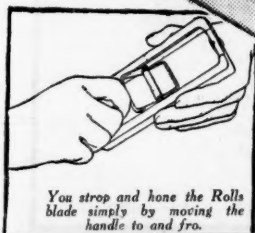


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